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ON THE COVER: One of New Mexico's bountiful assets is sky—great sweeps of it that are deep blue in the daytime and crowded with stars at night, most of the time. At other times, especially during the summer, massive clouds brew over the mountain ranges and erupt in spectacular thunderstorms like the one in Bill Jack Rodgers' photo. Los Alamos scientists have an unusual interest in these storms. The story starts on Page 20.

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Short Subjects

Additional parking space for airplanes has been provided at the Los Alamos Airstrip by the Zia Company. In all, 17 tiedown units have been added, including 10 for transient aircraft. The additions, which are along the south side of the field, bring to 49 the number of tiedown and hangar spaces available to aircraft at the strip, which logged 5,500 private aircraft flights in the year ending in June. These were in addition to the 8,500 flights made by Carco, Zia reported.

Five persons have been elected to a newly-formed Architectural Control Committee for Barranca Mesa Subdivision No. 4. The group was chosen at a meeting of lot purchasers in the subdivision, which is the final increment to be developed by the AEC. Members are F. L. W. Reed, chairman; Ben Gillespie, Martin Reischfeld, Ray Partridge and Walter Reichert.

The Certificate of Merit of the Association of Nuclear Editors has been awarded The Atom for the second consecutive year. The award, given annually to the publication "which best fulfills the purpose of the ANE," was made at the annual conference of the International Council of Industrial Editors in San Francisco, Calif., in June. Another Los Alamos publication, the Zia Company's Zia News, received an ICIE "award of excellence" for special format publications in the 2,000-5,000 circulation category.

Harold B. Finger, head of the Space Nuclear Propulsion Office, has been named director of a new division created by the Atomic Energy Commission—the Division of



Space Nuclear Systems. Finger will continue in charge of SNPO, the joint AEC-NASA agency that conducts Project Rover, the nuclear rocket program. The new office will administer space reactor and isotope electric power systems work, including the SNAP system, and space-directed advanced reactor concepts activities.

The wives of two LASL staff members are among a group of professionally-trained women pioneering in a new AEC part-time employment program. Mrs. Marjorie B. Chambers and Mrs. Mary C. Byers, both holders of masters degrees, will write a comprehensive history of Los Alamos. Both women attended an informal conference at AEC's Germantown, Md., headquarters in late June and have six-month AEC employment appointments. AEC says the program will return professionally-trained women to the labor market, make economical use of their skills and provide a reservoir of stand-by talent. Mrs. Chambers is the wife of William H. Chambers, W-7 Alternate Group Leader. Mrs. Byers is the wife of Cleo C. Byers of N-2.

continued on next page

Shorts . . .

continued from preceding page

The possibilities for pulp and paper manufacturing in northern New Mexico are being explored by an Albuquerque professor. A U.S. Forest Service contract is sponsoring the studies of Dr. Rudd Goode of UNM's College of Business Administration. The report is due next June and will be a compendium of resource availabilities, production methods and market outlooks for such an industry in the northern Rio Grande Valley—part of which is considered an economically—depressed region.

Dimas Chavez of PUB, has received national recognition for his work on behalf of mentally retarded persons of New Mexico. A citation "for achievement of state planning coordination" was given Chavez by Eugene Oberdorfer II, national chairman of the Junior Chamber of Commerce. Chavez is serving his second term as New Mexico Jaycee chairman. Jaycee committees working under Chavez' direction worked on legislation to improve facilities for the mentally retarded, and a state-wide clothing drive for patients of a state mental hospital. Chavez is a member of Gov. Jack Campbell's Advisory Council for Mental Retardation, and has received the Los Alamos Jaycee Chapter's Distinguished Service Award.

Leslie M. Redman, D-6 Group Leader, is editor of the new National Classification Management Society Journal, which is published quarterly by the society. NCMS was founded in 1964 by Government and private industry people working in the field of classification.

Harold Agnew, W Division Leader, has been appointed to the Military Aircraft Panel of the President's Scientific Advisory Committee. The Panel is chaired by Dr. Richard L. Garwin, Director of Applied Research for IBM. Agnew has also been elected vice-chairman of the Army's Scientific Advisory Panel.

Rosen Is Head of MP Division

Several staff member assignment changes were made with the creation last month of MP (Meson Physics) Division. The new division was established "to pursue with maximum effectiveness further research and development related to the

proposed Los Alamos Meson Physics Facility," according to LASL Director Norris E. Bradbury.

MP Division replaces P-11, a group set up two years ago within the Physics Division to do LAMPF work.



ROSEN

Louis Rosen, a LASL staffer since

1944, heads MP Division. He most recently was alternate Physics Division Leader and Group Leader of P-10. Darragh Nagle, formerly P-11 Group Leader, and Fred Tesche, formerly GMX-11 Group Leader, are Associate MP Division Leaders. There are five groups in the new Division. Their functions and Group Leaders are:

MP-1 Accelerator Controls and Instrumentation, T. M. Putnam.

MP-2 RF Power Systems, D. C. Hagerman.

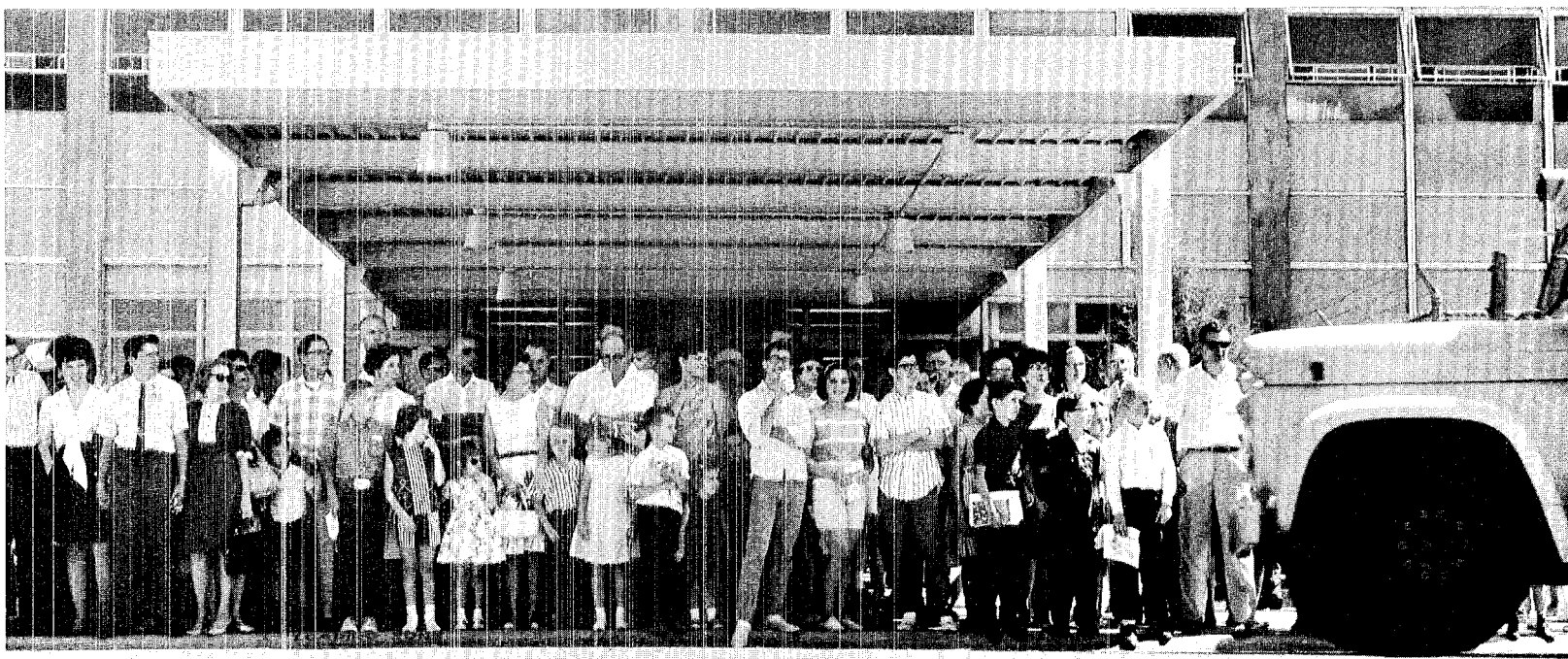
MP-3 Accelerator Structures, E. A. Knapp.

MP-4 Accelerator Physics, Darragh Nagle.

MP-5 Administrative Services, Fred R. Tesche.

Coincident with forming the new Division, Henry Motz, who had been group leader of P-2, was named Associate P Division Leader; John Yarnell was named P-2 Group Leader, and Wallace T. Leland was named Acting P-10 Group Leader. Eleanor Dunn, formerly of P-DO, is the new MP Division Secretary.

FAMILY DAYS



Photos by Bill Regan and Bill Jack Rodgers

A resounding success!

That's the official verdict on Los Alamos Family Days 1965.

The two-day event left denizens of the Hill with aching feet and somewhat taxed composites—but with a buttressed understanding of what makes the Atomic City tick.

An estimated 20,000 persons took advantage of lowered security barriers and flocked to the Laboratory. Many were out-of-town visitors. Also this year, for the first time, AEC, Zia and the County opened their facilities. Thus the redesignation: Los Alamos (instead of LASL) Family Days.

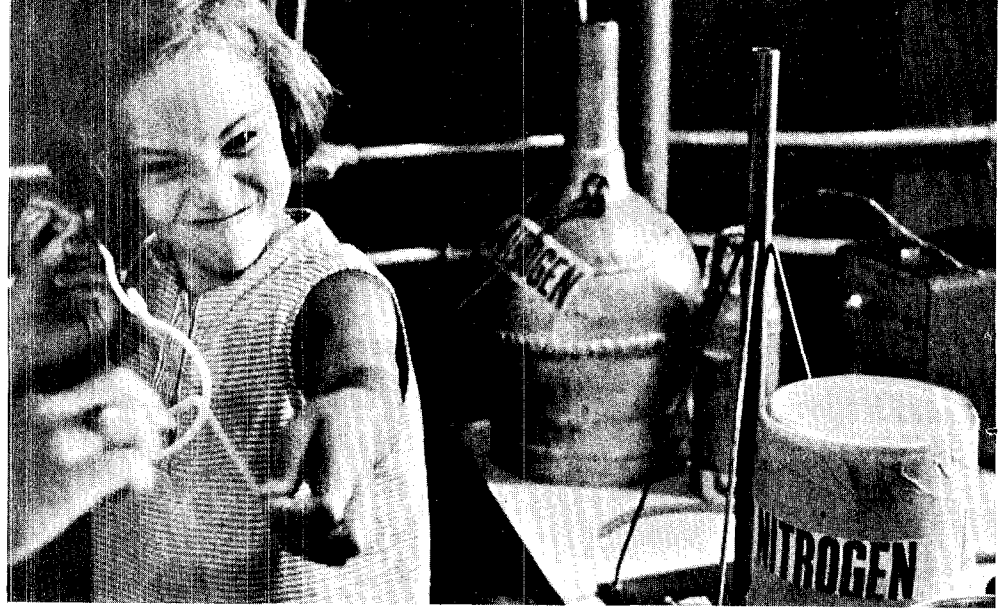
Logistics were impressive. Buses made 586 trips during the two days to LASL technical sites, covering an aggregate of 3,733.2 miles. Two thousand cars stopped at main road information booths. The Lab's two cafeterias served 6,000 meals. And

as cleanup crews soon discovered, busy soft drink machines dispensed 10 thousand bottles of pop to the thirsty throngs.

Family Days was initially organized in 1955. Why? So Johnny and Susan could see where daddy (and often mommy) works. A sequel, its itinerary and purposes reworked, followed in 1960. The July 17-18 edition, consequently, was No. 3. And viewing dad's office still rates as one of the highlights in the quinquennial occurrence.

Family Days planners cited "excellent" cooperation, and the multiplicity of exhibits—from the minuscule to the expansive—was ample evidence of the LASL staffs' enthusiasm. "Organizationally and technically, it was not just a job well done; it was superbly done!" said Director Norris E. Bradbury.

The story is best told by people and pictures, as the following photographic essay shows.



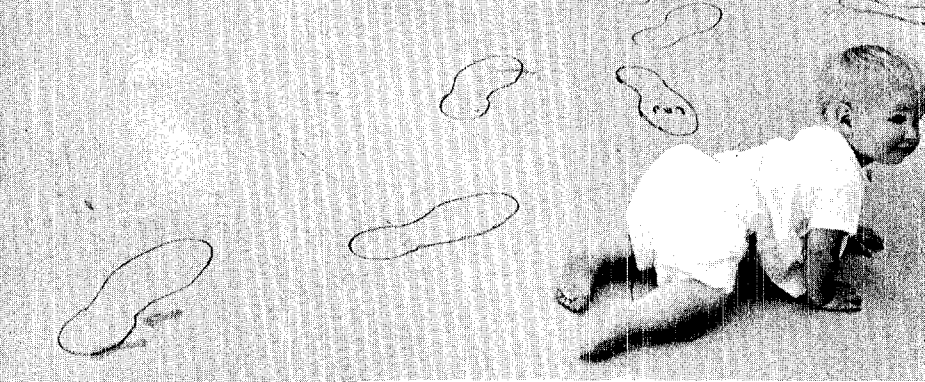
Upper Left: Assembly of critical masses is explained at Pajarito Site's Kiva II.

Above: "Strange things are happening," deduces Gay Waber, handling rubber hose made rigid after being dipped in a beaker of super-cold liquid nitrogen.

Lower Left: Automatic computer typewriter has Laurie Spicochi spellbound.

Below: Operation of UHTREX is explained by Bill Barney at Ten Site.



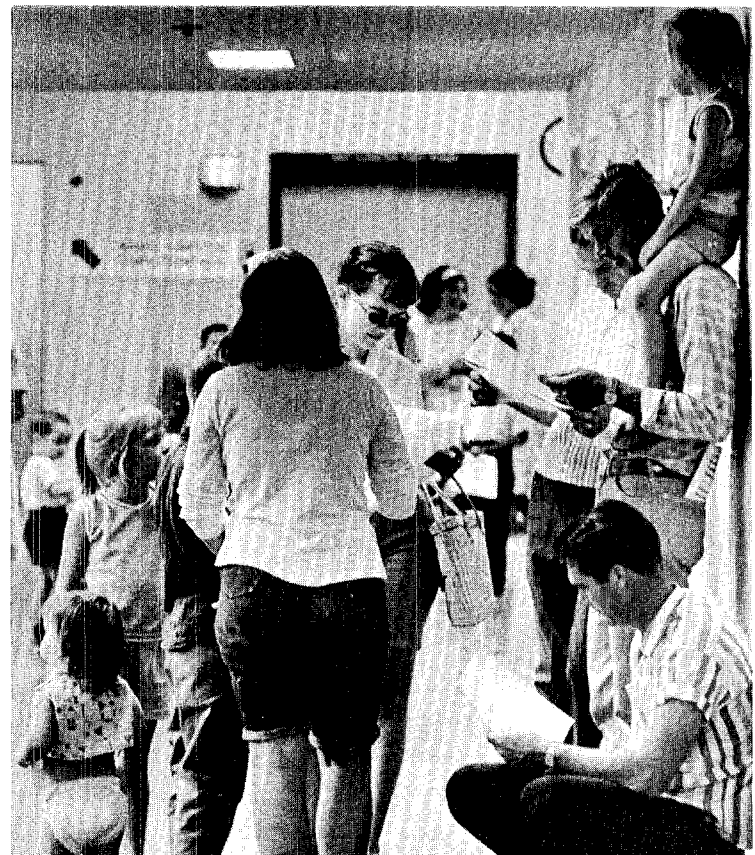
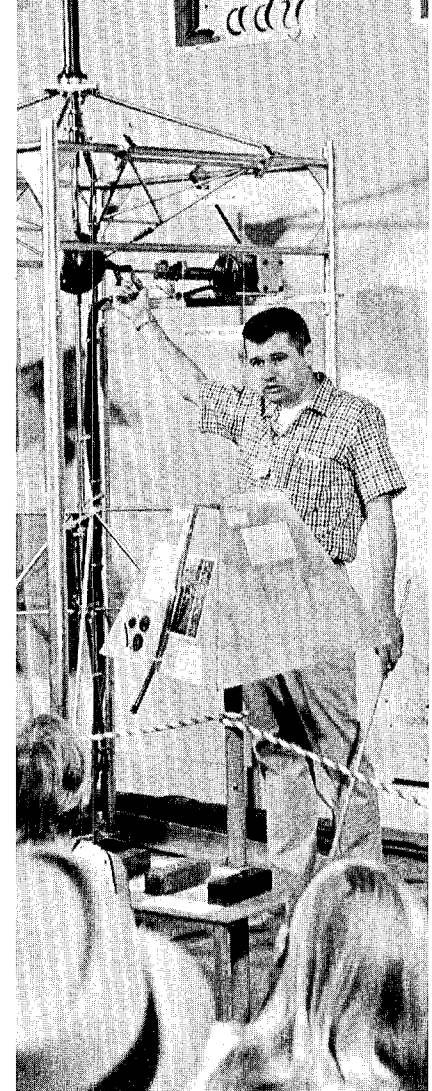


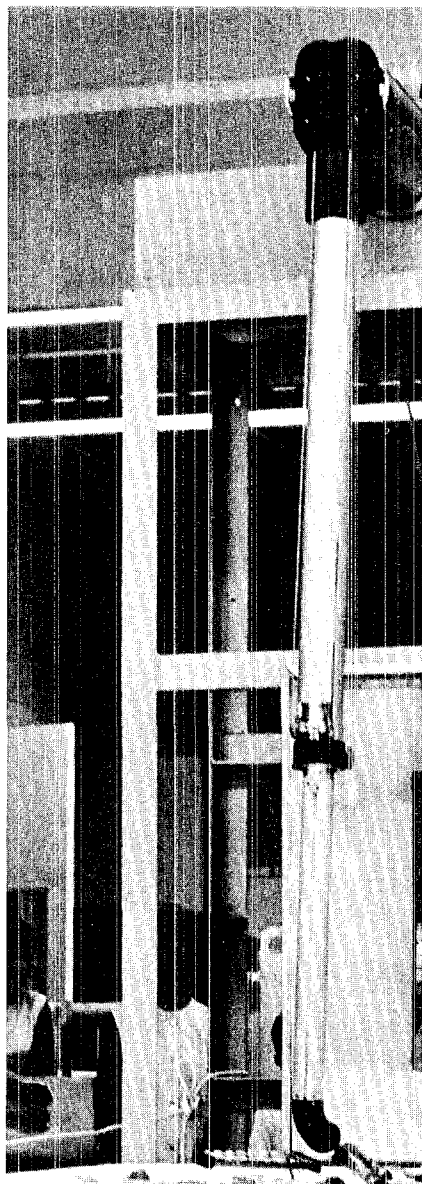
Above: Young David Noland crawls amid tracings of steps taken in Wing 9, CMR Building, during 1962 visit by the late President Kennedy and then Vice President Johnson.

Upper Right: This spindly miss, "Lady Godiva," is actually an unclad reactor, explains James A. Grundl of N-2.

Lower Right: Armed with explanatory materials, this motley group halts near Administration Building elevator to read . . . and rest.

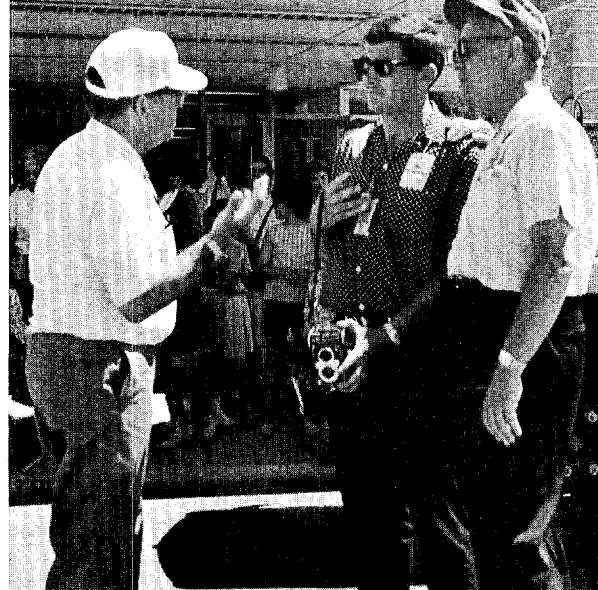
Lower Left: High explosives normally hurl down this test drop tower at K-Site. Inspecting the area are L.G. Hawkins, of LASL director's office; C. W. Richards, Los Alamos school superintendent, and their wives.



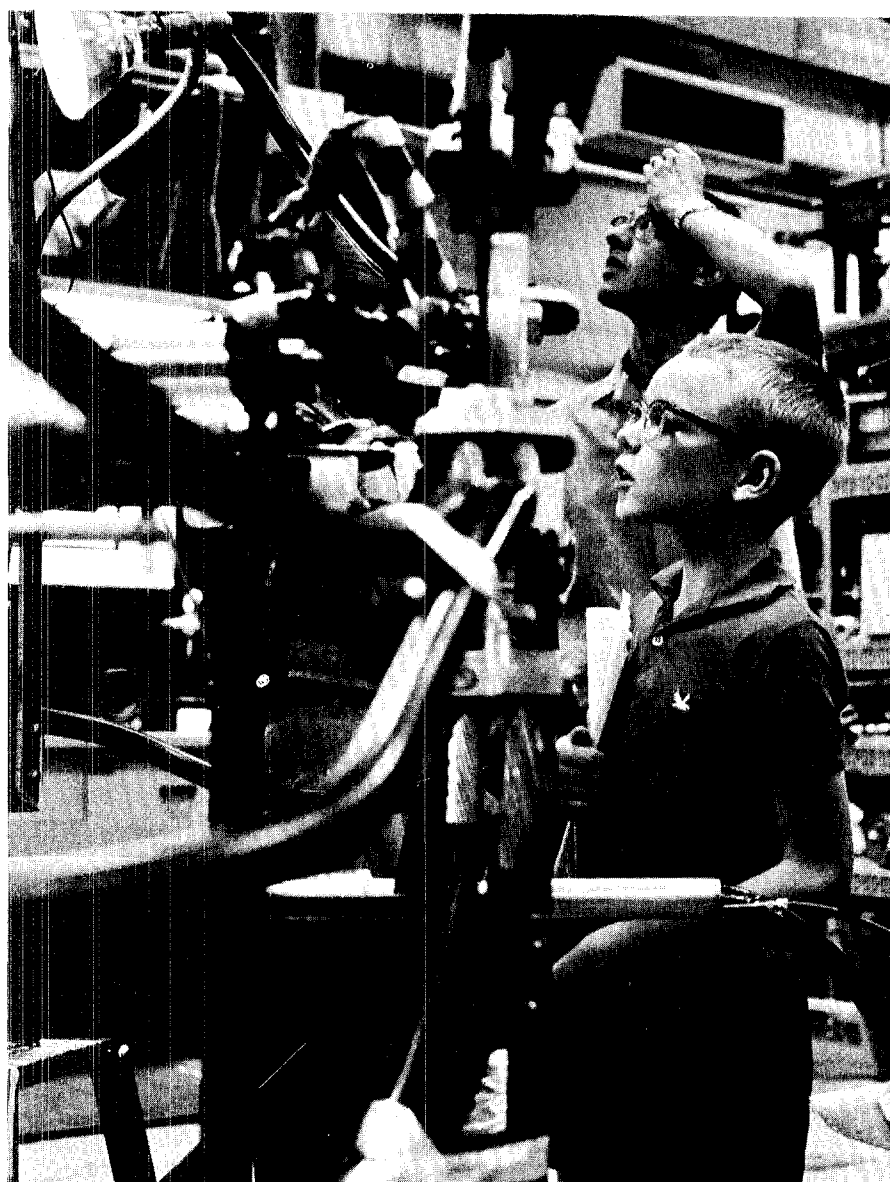
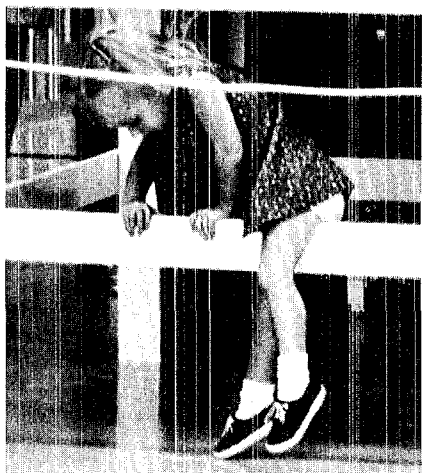


Left: This youngster, oblivious to operation of manipulator in Wing 9 of CMR Building, enjoys a world of her own.

Right: Constantly on the job during Family Days were Bob Brashear, Dimas Chavez and Bob Porton of PUB.



These intrigued fellows, viewing the intricate apparatus at Project Sherwood, seem to think: "Boy! It sure beats tinker toys."





The Waber clan gets lesson in cryogenics.



Above: Magnetic cannon operated by Project Sherwood staff draws attention of LASL Director Norris E. Bradbury (center) and Robert M. Underhill, Vice President and Treasurer of the Regents Emeritus of the University of California.



Donna Sue Crook tries out daddy's desk in D-8.

Below: HRL's animal population was favorite with kids.

Below: LASL's two cafeterias (South Mesa is seen here) served 6,000 meals to hungry visitors during Family Days.

Bottom: This bus stop, one of many on the three laboratory routes, was at TA-50, LASL's radioactive waste disposal site.





Above: Coke-time for Janet Lynn Butler, daughter of Dan Butler of T-3.

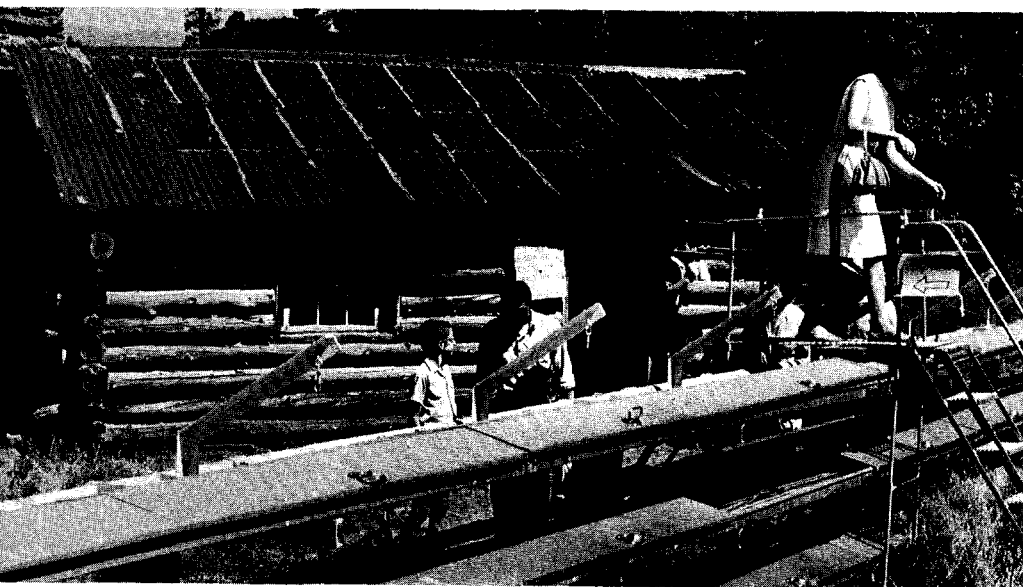
Left: Jeff Watts of N-4 has his hands full with Watts gang. That's Jonathan, 2, sitting on dad's shoulders.



LOS ALAMOS FAMILY DAYS

Above: Steady stream of visitors pours toward the Administration Building from the parking lot. Hut at left contains base station for radio net operated by amateur radio personnel that afforded Family Days officials instant communications.

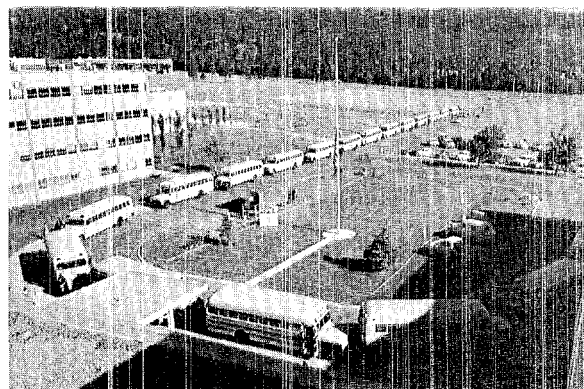
Below: Old Dwight Young cabin was converted to a refreshment stand at Pajarito Site, in sharp contrast to the nuclear research facilities nearby.



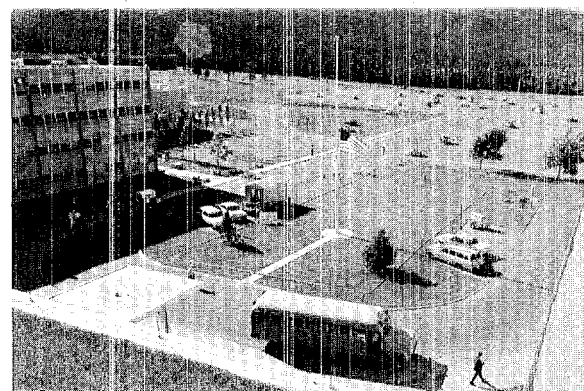
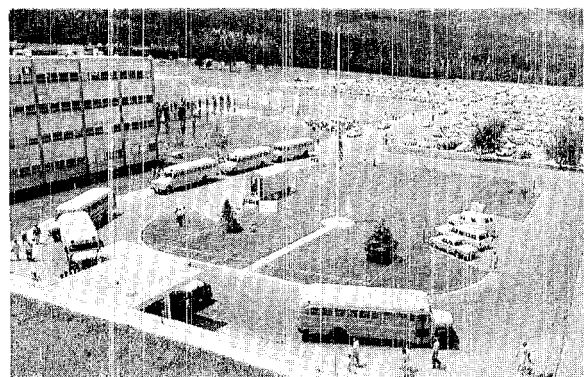
Opposite: From vantage point atop the Administration Building, PUB's Bill Jack Rodgers captures the parking lot-and-circle drive panorama below at three different times on Family Days Sunday. Top photograph, partially darkened by deep shadows, was taken at 8:30 a.m. with buses in readiness—but few people and cars in sight. That afternoon at 2:30, a totally-changed scene appears. By 5:30 p.m., the action has ended and only a few late-leavers are in view.



Reclining Patty Porto is pensive during brief rest period in front of Administration Building.

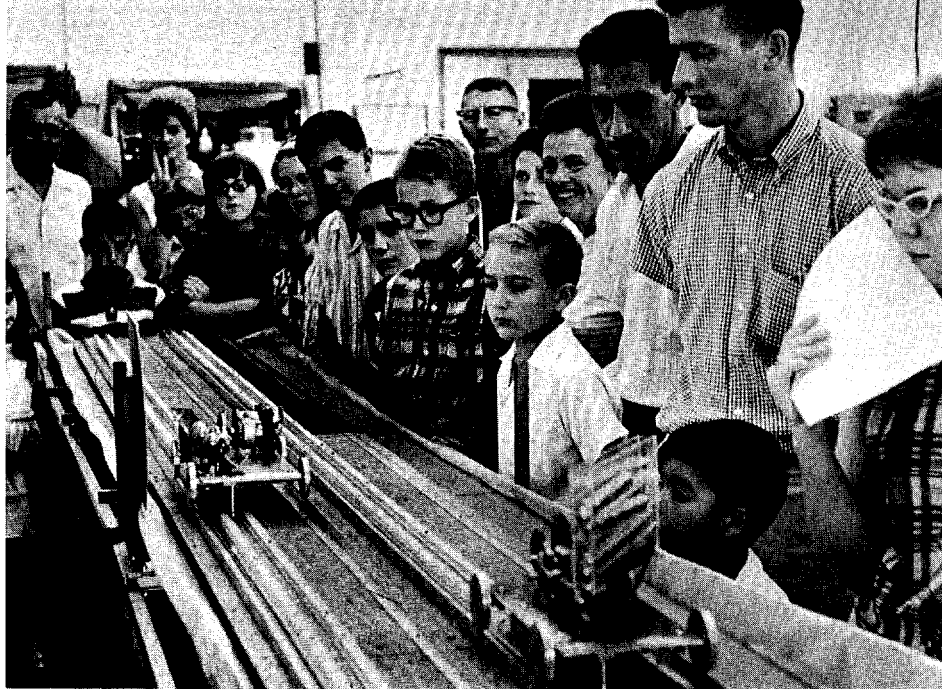


One of many fascinating gadgets in Stretch computer building catches everyone's attention (everyone but Junior, that is). LASL computers tested reaction times, delivered horoscopes and matched names with telephone numbers.



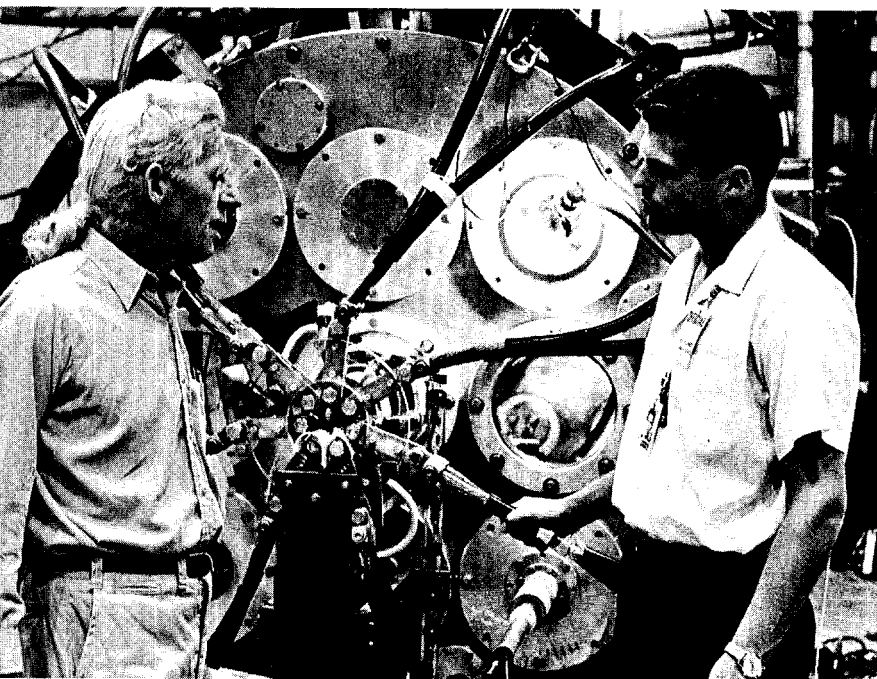


Visitors to AO-4 scan horoscopes that were produced by computer.



The "hydrogen-powered" device wins every time in this reciprocating rocket demonstration at Pajarito Site, touting the advantages of a light rocket propellant.

George Hankins of Albuquerque, taking a tour of Project Sherwood, stops to talk with Bob Carpenter of P Division.



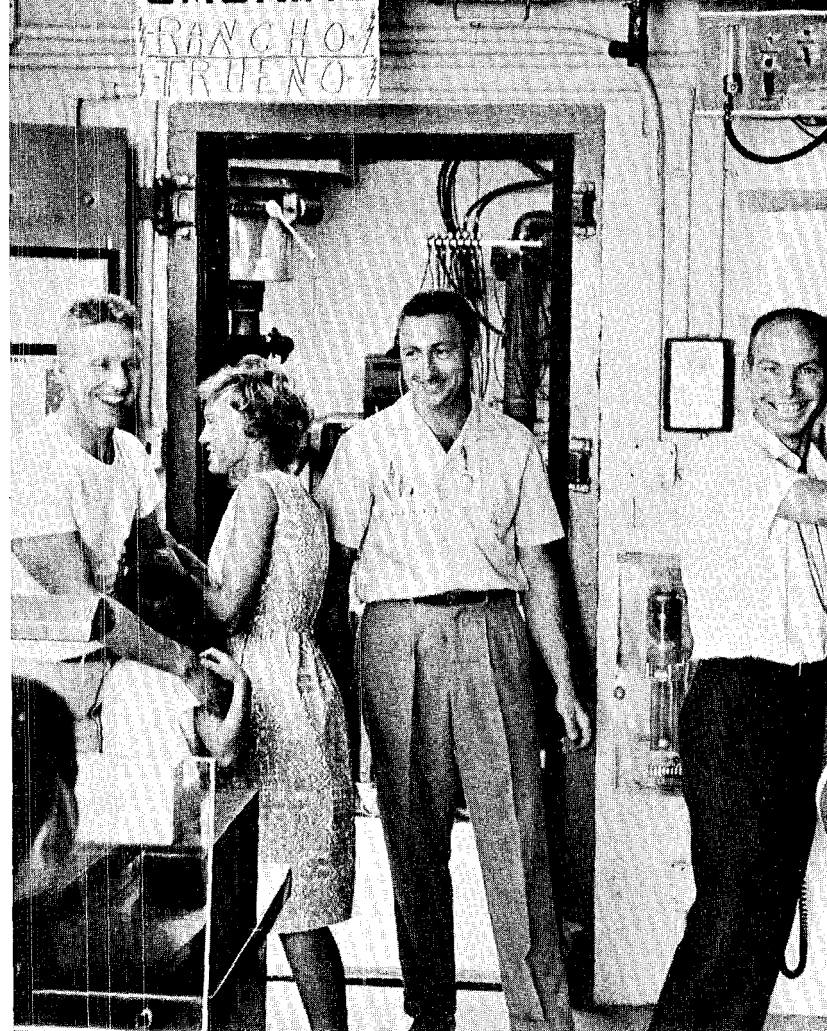
Renee LaBauve gets an explanation of archaeological exhibit from Frederick Worman of H-8 in HRL Building.



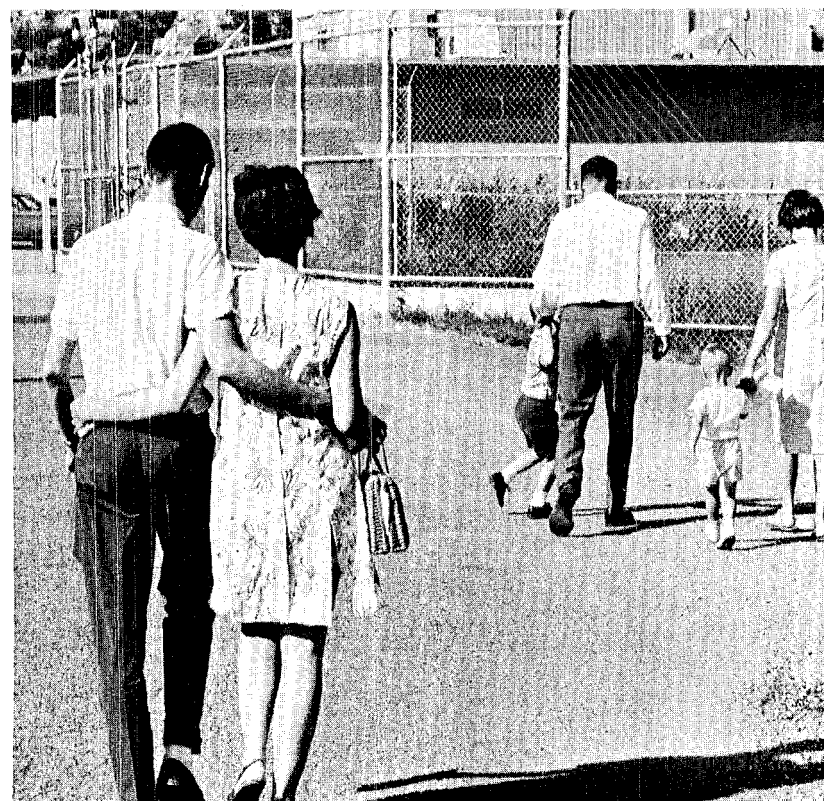


Above: Back in 1955, when the Laboratory held its first Family Days, the youngest visitor was six-weeks-old Pam Petersen, daughter of SP-1's P. M. Petersen. D-8 Secretary Hazel Son held Pam on her lap then, and was photographed by Bob Crook. Pam was back this year, so was Hazel, and so was Photographer Crook.

The end to a long but rewarding weekend arrives at Pajarito Site at 5:15 p.m. Sunday. Virtually to the man, LASL employees could claim satisfaction for a worthy and well-executed performance. " . . . superbly done," said Director Norris Bradbury.



Bobby Craig, GMX-8, livens up the crowd by blowing warning siren at Meenie firing site. Others are, from left, Dale Holm of K-1, Mrs. Craig and John LaBerge.



A MATTER OF SPIN

*Intricate Experiment at Boulder Fine Example
of Inter-Lab Cooperation*

By ED WALTERSCHEID

What happens when one proton interacts, or collides, with another? The answer to this question provides basic insight into the forces which hold protons and neutrons together in the atomic nucleus. Physicists have been seeking the answer for three decades, but only in the last few years have some of the details become clear.

Take, for example, the matter of spin.

It has long been known that protons spin like tops, that this spin can be either clockwise or counterclockwise, and that the binding forces within the nucleus are dependent on the manner in which its protons and neutrons are spinning.

A basic question then, fundamental to the understanding of the nuclear binding forces, is: Exactly how does a proton-proton interaction depend on the spin of the individual protons? One way of answering this question is to measure

what happens to this spin as a result of the interaction or collision. Do both protons spin clockwise, or counterclockwise, or do they spin in opposite directions?

It took several years, the use of the University of Colorado's cyclotron, and the cooperation of staff members and technicians at LASL, the University of Colorado, and the University of New Mexico for LASL physicists John Brolley and Nelson Jarmie to answer that last question.

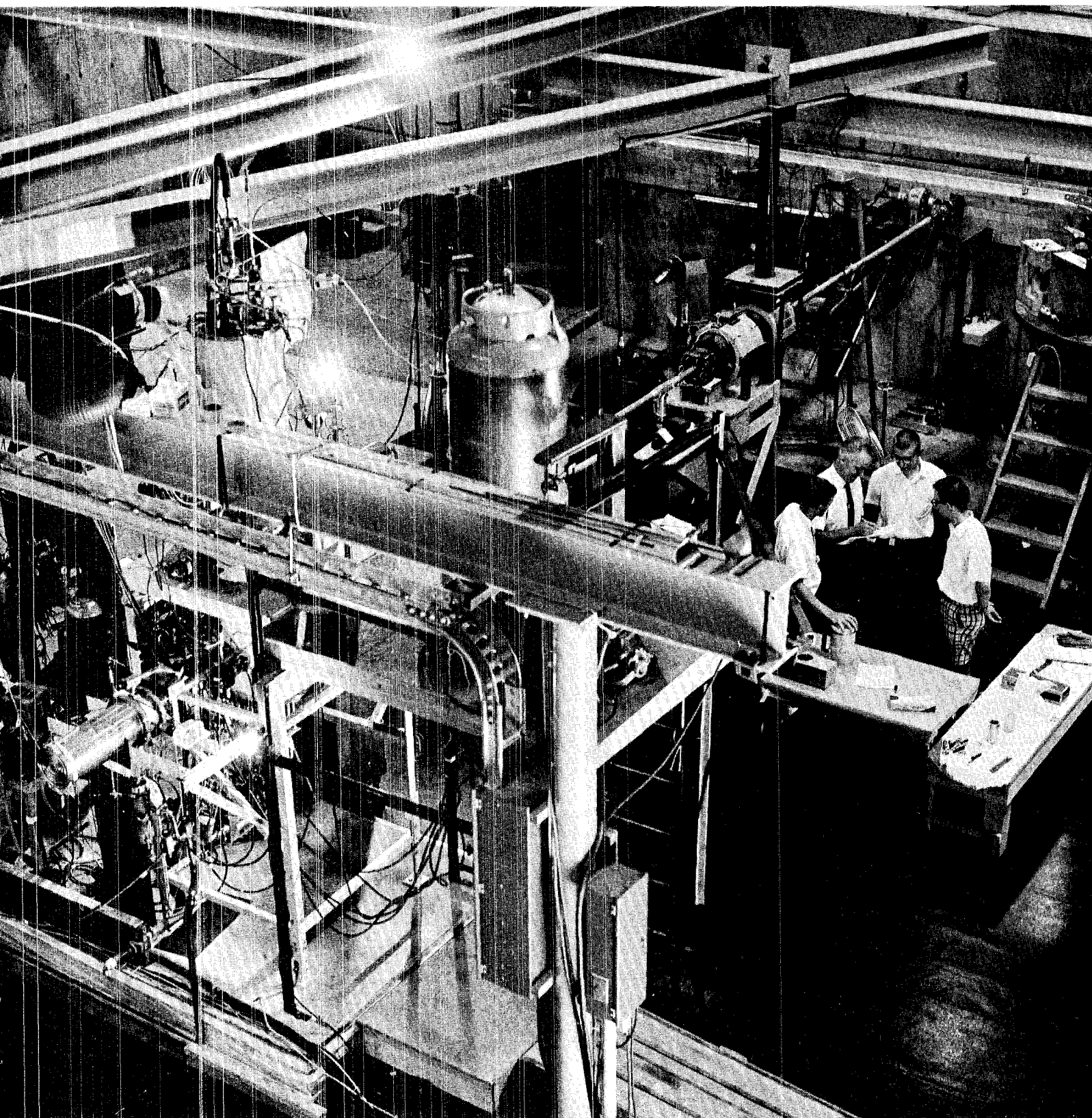
Their measurements were made with a proton beam energy of 27.5 million electron volts. According to Jarmie, other measurements of this type have been attempted in the energy range below 50 MeV, but the LASL-CU measurements will probably be the most reliable to date.

In the lexicon of the physicists, the experiment by which Brolley and Jarmie, and their colleagues—

Paul Allison, Ed Bixby, and Rodman Smythe of CU, Howard Bryant of UNM, and Herald Kruse and Malcolm Wallis of LASL—obtained their measurements is known as a Cnn experiment. In such an experiment, a beam of protons strikes a proton target. At rare intervals, a proton from the beam collides with one in the target and both fly out. The purpose of a Cnn experiment is to determine, through the use of suitable spin analyzers, the simultaneous spin directions of both such protons.

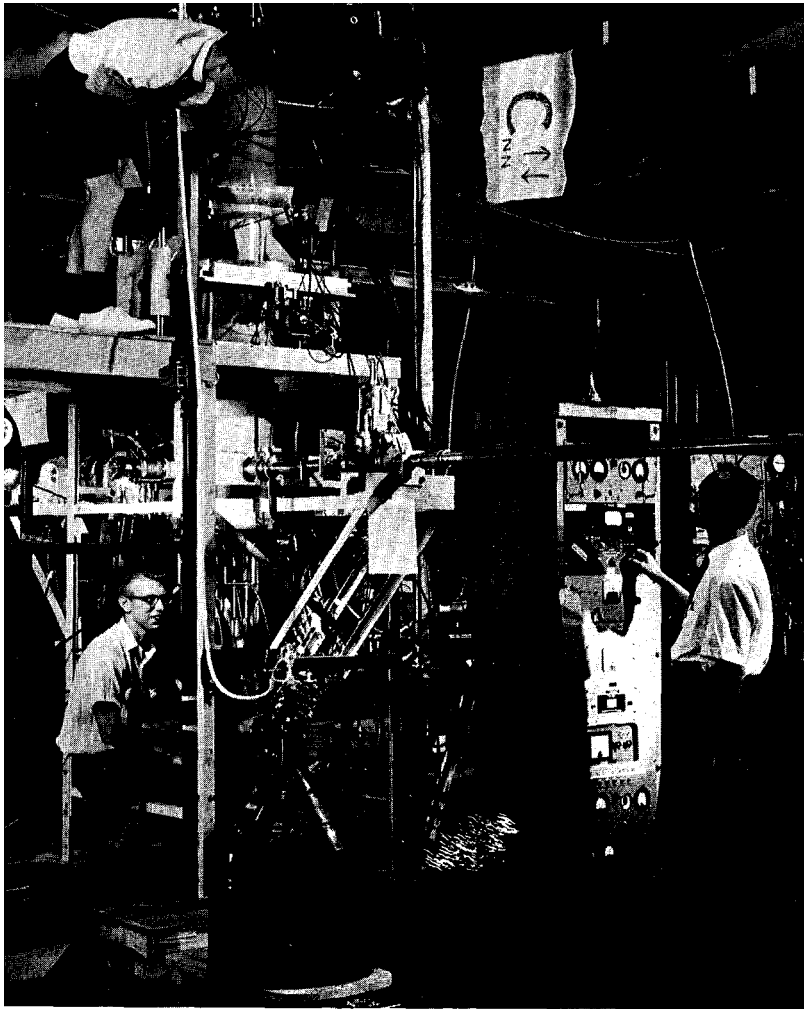
At the time the experiment was designed, there was no accelerator at LASL capable of providing a proton beam at the necessary energy level. Consequently, arrangements were made with the University of Colorado to use their newly-completed cyclotron at Boulder. This cyclotron produced a narrow, steady beam which was

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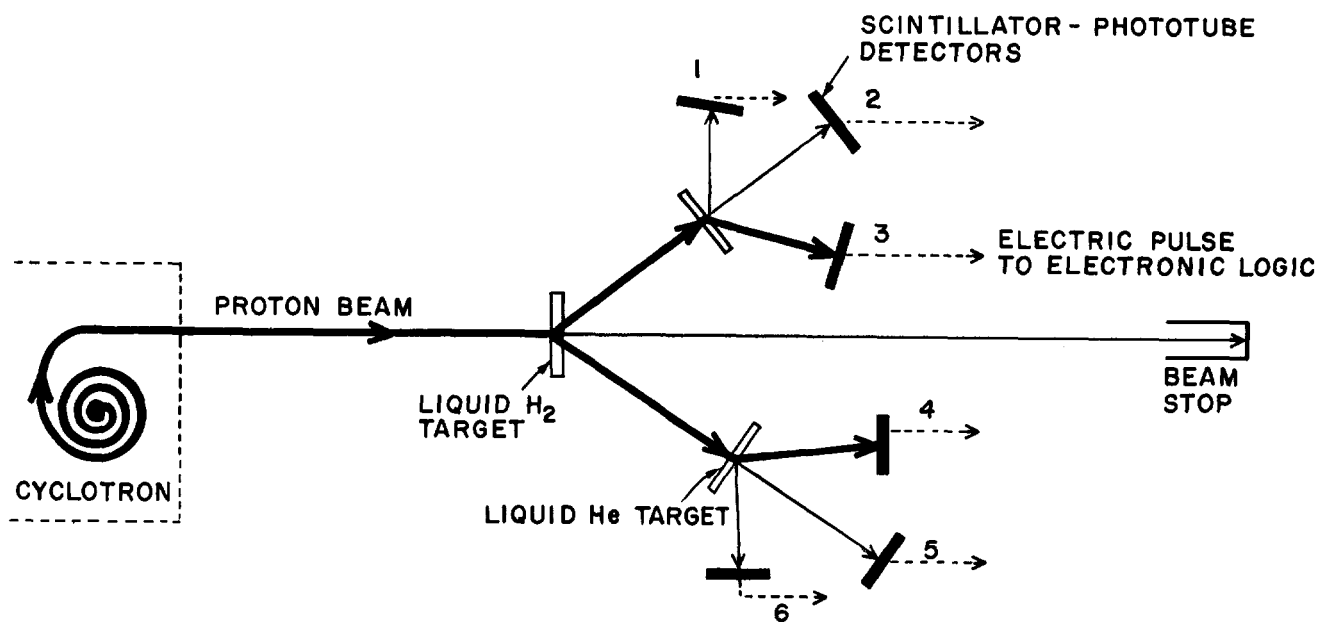


Experiment and experimenters (from left: Jarmie, Brolley, Bixby and Allison). Proton beam from cyclotron (in con-

crete vault in background) passed through the small vacuum pipe and entered experimental apparatus at left.



During cool-down, Nelson Jarmie, (top) of LASL, and Ed Bixby, (left) of CU, monitor helium filling while Rodman Smythe, also of Colorado, checks vacuum conditions.

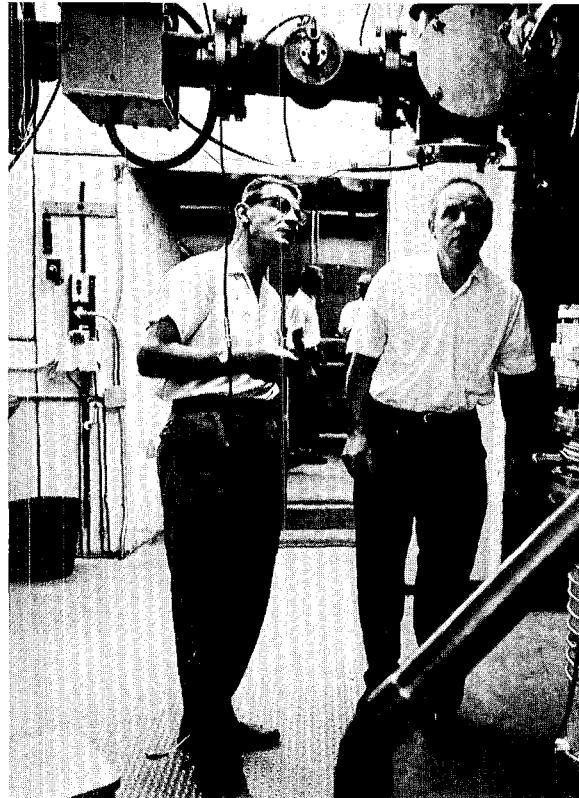


Bold lines represent path of protons during a significant interaction in intricate Cnn experiment. As shown here,

simultaneous pulsing of detectors 3 and 4 indicates that the two protons are spinning in opposite directions.



Howard Bryant, (right) of UNM, explains a stage in the construction of computer code to Herald Kruse.



David Line (left) and Jack Kraushaar, who guided construction of the new CU research cyclotron.

SPIN . . .

text continued from page 12

essential for the success of the experiment.

The experiment was designed by Brolley and Jarmie to be a triple scattering experiment. That is, a proton from the cyclotron would first have to collide with a proton in a hydrogen target, causing both protons to fly out of the target area. Each of these protons in turn would have to interact, almost simultaneously, in its own helium spin analyzer.

To increase the number of collisions, liquid hydrogen was used as the proton target and liquid helium was used in the spin analyzers. The liquid hydrogen was held at about -411°F while the liquid helium had to be kept at -453°F , only 4° above absolute zero.

Even under these extreme conditions, only about one proton in ten trillion in the proton beam inter-

acted with the target so that the spin of both recoiling protons could be measured. During the experiment at Boulder, this meant about 20 significant measurements an hour, even though the accelerator was operating continuously.

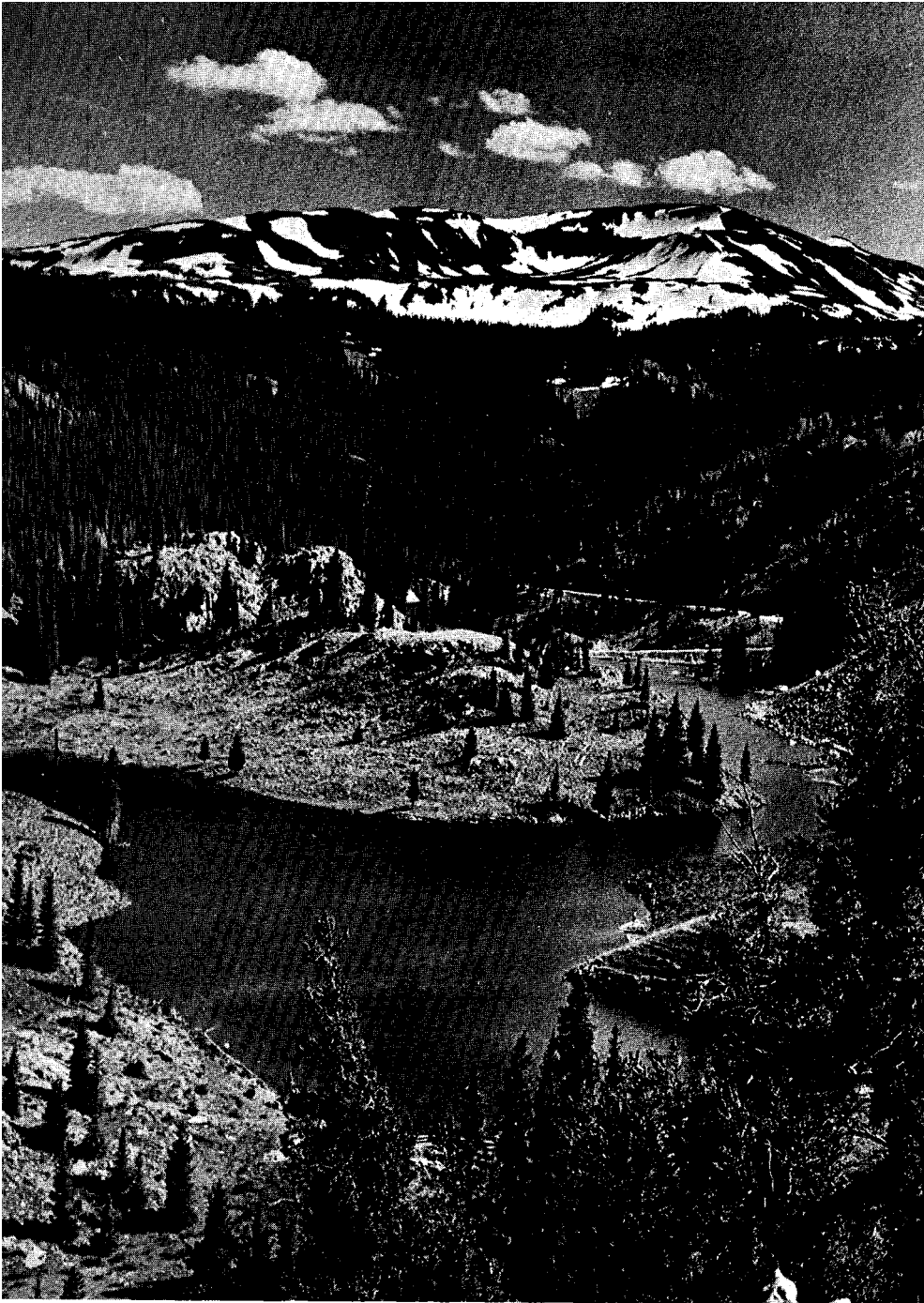
Although protons recoil from the target at various angles, the geometry of the experiment was such that only those recoiling at 45° angles either side of the beam would enter the spin analyzers. A proton spinning clockwise is deflected at a certain angle when it strikes the helium in the analyzer. One spinning in the opposite direction is deflected through an equal but opposite angle. The deflected protons then are detected and measured by scintillation counters.

The protons are traveling close to the speed of light and a counter must be able to detect their time of arrival within a few billionths of a second. If the detectors were not this accurate, protons coming

from various extraneous collisions would be confused with those of interest.

The final experiment was run continuously for some two hundred hours in order to obtain a statistically significant number of measurements. Final results of the measurements are not yet available, because of complicated calculations that must be made on the spin analyzers. These calculations are now being made with a computer program developed by Howard Bryant of UNM.

Brolley emphasized that "execution of this very difficult problem was possible only because of the superb performance of the University of Colorado cyclotron and the close cooperation of faculty and graduate students from Colorado and the University of New Mexico. It is another excellent example of cooperation in basic research problems between the regional schools and LASL."



Left: Mix Lake, a natural pond adjoining Platoro reservoir, is tiny but full of trout. Road to Platoro dam is at right center.

Right: Fisherman on the Conejos is in stretch of river posted for fly fishing only.

Lower Right: The Conejos river is unique in that even the privately-owned stretches are open to fishing. The huge T-Bone ranch, one of the nation's largest cattle spreads, welcomes fishermen with signs and even erected ladders over the fences.

By JOHN YOUNG

Welcome Mat's Out

In Conejos Country



Many outdoor types from Los Alamos and elsewhere in northern New Mexico find that both the quality and the quantity of Rio Grande water have deteriorated to such a state by the time it gets close to home, it is preferable to go up and meet it nearer its source.

This fact accounts for the large numbers of New Mexico license plates that are seen all summer along the Conejos River from its source at Platoro Reservoir all the way down to its confluence with the Rio Grande just above the state line east of Antonito. The Conejos is a major tributary of the Rio Grande and enjoys some special distinctions as well. It offers a 50-mile stretch of some of the finest fishing water in the Rocky Mountain region without a "No Trespassing" sign. In fact, the huge T-Bone Ranch, which owns a considerable frontage on the river, actually welcomes fishermen. The T-Bone has even built ladders over the fences to make access easier for fishermen. In cooperation with the Colorado State Game and Fish Department, it has posted some reaches in the lower river for fly fishing only. The river is liberally stocked with trout—rainbow, cutthroat, and browns.

On some of the Federal land along the river, the U.S. Forest Service has established several large campgrounds, fully equipped and usually fully occupied during the summer and well into the fall. In between the established campgrounds there are innumerable places to park a trailer or set up a tent. Hundreds of families do so, but the place is so big it never looks really crowded except maybe on the Fourth of July.

All along the way, from Antonito to the foot of Platoro Reservoir, resorts of all levels range from primitive to posh, from truly rustic cabins with outside plumbing to modern apartment-type motel accommodations. There are also several summer home developments, both public and private. Since most of the river is above 8,000 feet above

sea level, the winter population is about zero, save for hardy elk, deer and bear hunters in season. A few resorts stay open for hunting parties into November.

The river got its name, Conejos, meaning rabbits, from the early Spanish explorers, Juan Bautista de Anza (1779) and others, who remarked on the huge population of the long-eared critters. There are still many jack rabbits and cottontails in the lower regions, and snowshoe hares in the high country. Rabbits kept the Indians, the Spanish explorers, the early fur trappers and the Mormon settlers who followed them from starving through many a hard winter. They still support a fair-sized population of wildcats, coyotes and cougars, as well as other lesser predators.

Like most of the Colorado high country, the Conejos is lined with ghost mining villages and a few remaining towns dating from the gold and silver stampedes of the 1870's and 1880's, some of them persisting as late as World War I. Platoro is one of these—its name probably a corruption of the Spanish "platero," for silversmith, or "plata" for silver.

Because of its magnificent setting in a wide, lush, and flower-bedecked alpine valley close to 10,000 feet above sea level, surrounded by snow peaks and watered by innumerable small streams and springs, Platoro became a natural mecca for tourists once automobile travel into its remote vastness became feasible. Platoro never really died, as a result. The last of the die-hard miners were still poking holes in the mountains when the fishermen, the hunters and the campers began to arrive.

Construction of Platoro Dam and its 1000-acre reservoir in 1951 as a flood control and irrigation project really put life into the place. Old miners' cabins sprouted new roofs and windows, trailers appeared in numbers, and the rush was on. You can rent a horse, a cabin, a jeep or a boat there now, hire a packer or

continued on next page



Camping on the Conejos, in one of the many dells along the river which supplement Forest Service campgrounds.

Conejos . . .

continued from preceding page

hike on foot over well marked trails to hidden lakes. Platoro Lake is too cold to swim in but not too cold for fishing, boating and even water-skiing.

The "season" is usually from June through September, with a few adventurous souls extending the period at both ends in some peril of being snowed on. In winter, Platoro is buried out of sight under snow, which remains on some of the higher peaks and passes until July. A rough road leads past the reservoir and over Celeste Pass (11,400 feet) to the headwaters of the Alamosa River, which it follows down to the main highways in the San Luis Valley. A side branch passes Summitville, a now-defunct but once large-scale gold mining opera-

tion which operated as late as 1927. The tourist towns of South Fork and Del Norte on the upper Rio Grande can be reached from this point, but local inquiry is advisable before attempting the trip.

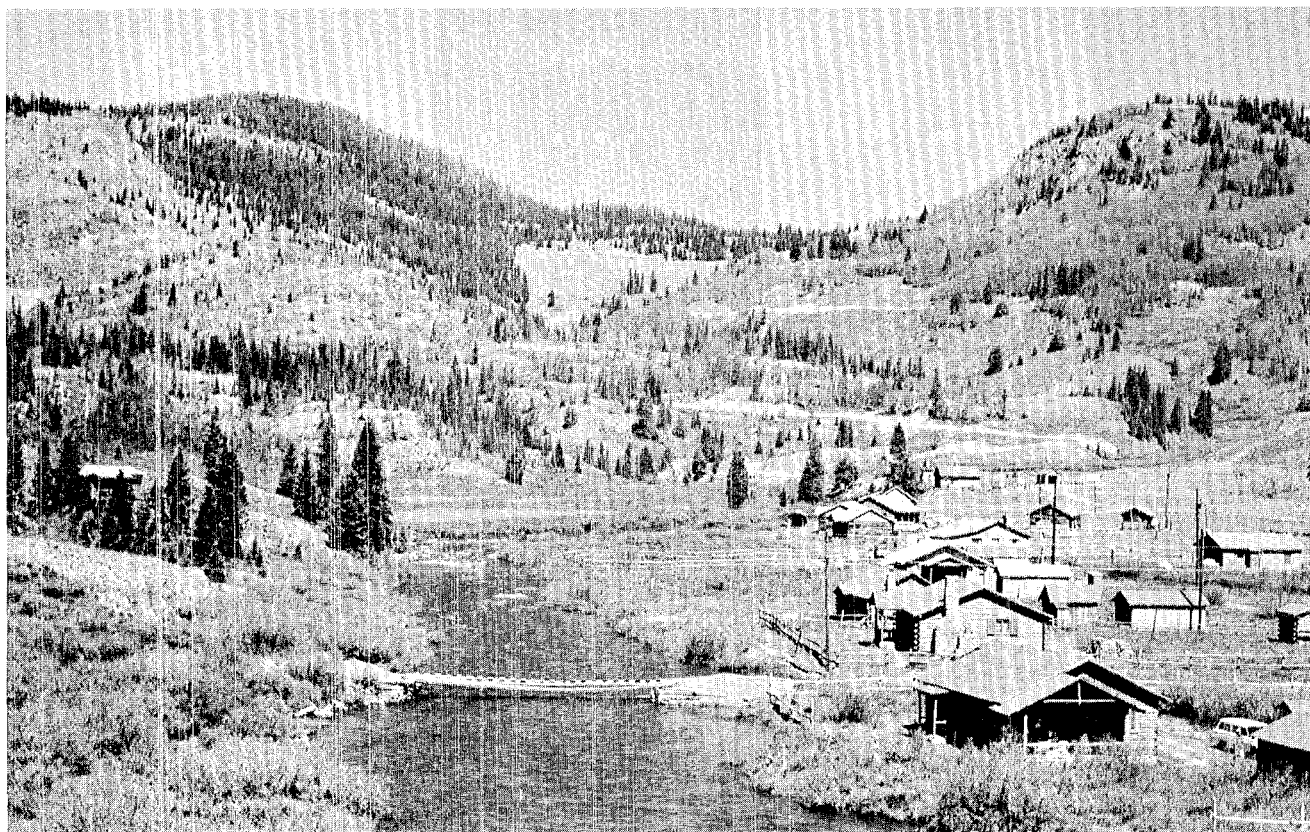
Pavement now ends 26 miles west of Antonito on the Conejos River Road, Colorado 17, halfway to Platoro. At this point, Colorado 17, now a gravel road, turns south over 10,000-foot La Manga and Cumbres passes to enter New Mexico below the little railroad village of Cumbres, notable for its now-dilapidated snowsheds, 13 miles northeast of Chama. This is a dusty but spectacular and highly scenic trip, roughly paralleling the route of the Denver and Rio Grande narrow-gauge railroad. The railroad still hauls freight and timber between Chama and Antonito on an "as-needed" schedule, and runs sight-

seeing tours for passengers during the summer months, also going on westward to Durango and Silverton. Until 1941 a branch ran from Antonito south to Santa Fe, known as the "Chili line" for its principal freight. Part of the right-of-way is still visible along Highway 285.

The narrow-gauge railroad over Cumbres Pass to Chama was completed in 1880, and a toll road for wagons was built the following year. The auto route became a secondary state highway in 1923. It is still unpaved, closed all winter and difficult when wet, but otherwise easily negotiable by ordinary automobiles most of the time. Side roads lead to all sorts of lakes and streams, but most of these are posted with signs that say ominously, "Unsafe for motor vehicles." This means you can go, but at your own risk, and probably with a four-wheel drive vehicle.

But without going off the main roads, from June until October the loop trip up Highway 285 to Antonito, thence westward up the Conejos River to Platoro, then backtracking to come into New Mexico over Cumbres Pass and down the Chama, is well worth a day's trip—or a week's. The roundtrip distance, including the side journey to Platoro, is 300 miles, of which about two-thirds is now paved. The scenery is magnificent; the dazzling array of alpine wildflowers alone would make the trip a memorable one.

The Conejos River has another claim to fame which will not mean much to anyone who is less than 35 years of age or so. William Harrison Dempsey was born in the



Village of Platoro, once a mining camp and now a tourist mecca sprawls on both sides of the Conejos river, at an elevation of 10,000 feet above sea level.

little Mormon village of Manassa on the banks of the Conejos 10 miles northeast of Antonito, in 1895. His birthplace led to his acquiring the nickname, "The Manassa Mauler," from Damon Runyon, a sportswriter from Pueblo, Colorado. But that was after he became the world's heavyweight champion in 1919, under the name Jack Dempsey. Two older brothers used the fighting name of Jack Dempsey, borrowed from an old-time boxer known as "Jack Dempsey, the Non-Pareil," before little Harry made it famous.

Dempsey lived in Manassa until he was 17, spending his summers on the Conejos and helping his father cut and haul timber from the Cumbres Pass region. He learned to fight in logging and mining camps all over Colorado. His home town still bears the legend, "Birthplace of Jack Dempsey" on its roadside signs, and until recent years the family home served as a tourist attraction.

Shortly before it loses itself in the Rio Grande, the Conejos river passes the little Mormon town of Manassa, where a famous boxer was born in 1895.



they like lightning

By EARL ZIMMERMAN

Scientists from the United States and England are keeping a weather eye on the often wild summer storms that come tumbling from the mountains of northern New Mexico.

Working at the rather spartan TA-49 facilities on Frijoles Mesa, the researchers are studying the optical and electromagnetic properties of lightning.

Although the information they obtain will add to the basic store of knowledge about lightning, the main purpose of the work is to improve the discriminating capabilities of the Vela program for detecting nuclear bursts in space, and possible violations of the test ban treaty.

Since a nuclear explosion manifests many of the same radiation phenomena that are present in a strike of lightning, it is important

to be able to tell one from the other, to make sure the electronic sentries don't cry "Cheat!" because of a thunderstorm.

Host experimenter and coordinator of the summer-long program is LASL's J-10, supported by J-1, J-6 and D-8. Others are from the British Atomic Weapons Research Establishment (AWRE); Edgerton, Germeshausen and Grier, Inc., instrumentation contractors to the Atomic Energy Commission and the Department of Defense; the Denver Research Institute of Denver University; and the U.S. Air Force. Sponsoring agencies include the AEC and the Advanced Research Projects Agency of the DOD.

TA-49, which was used for explosives research a number of years ago, was chosen as the location for the station because it had buildings, electric service and "convenient



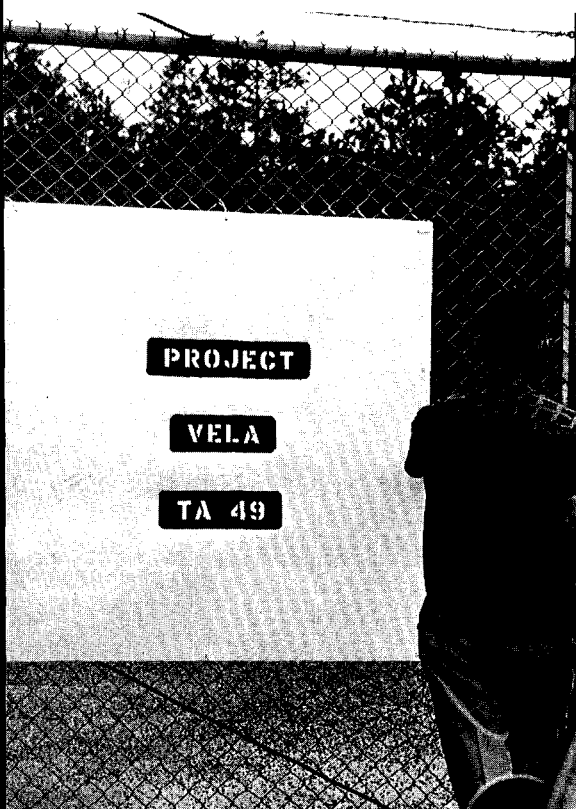
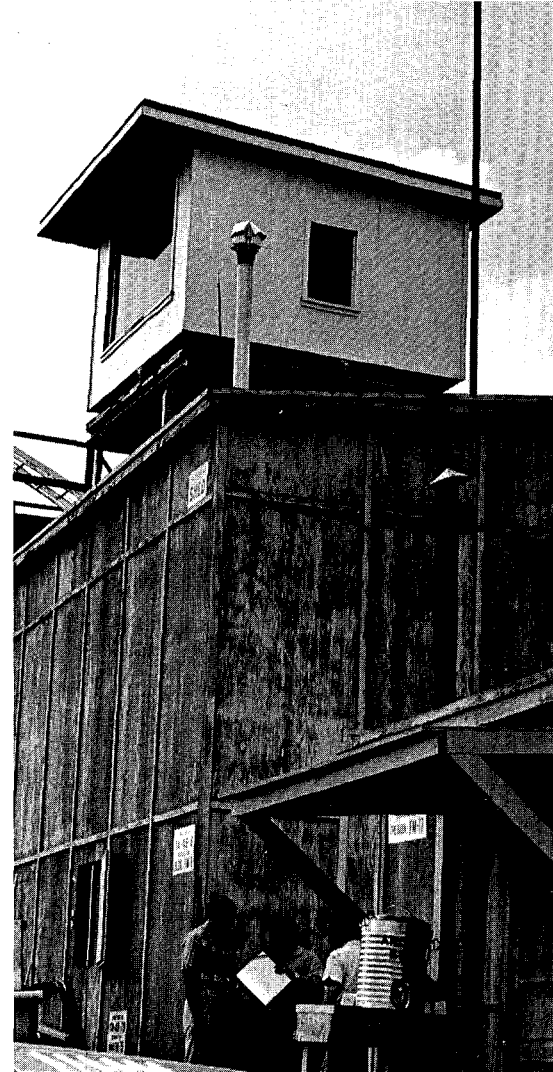
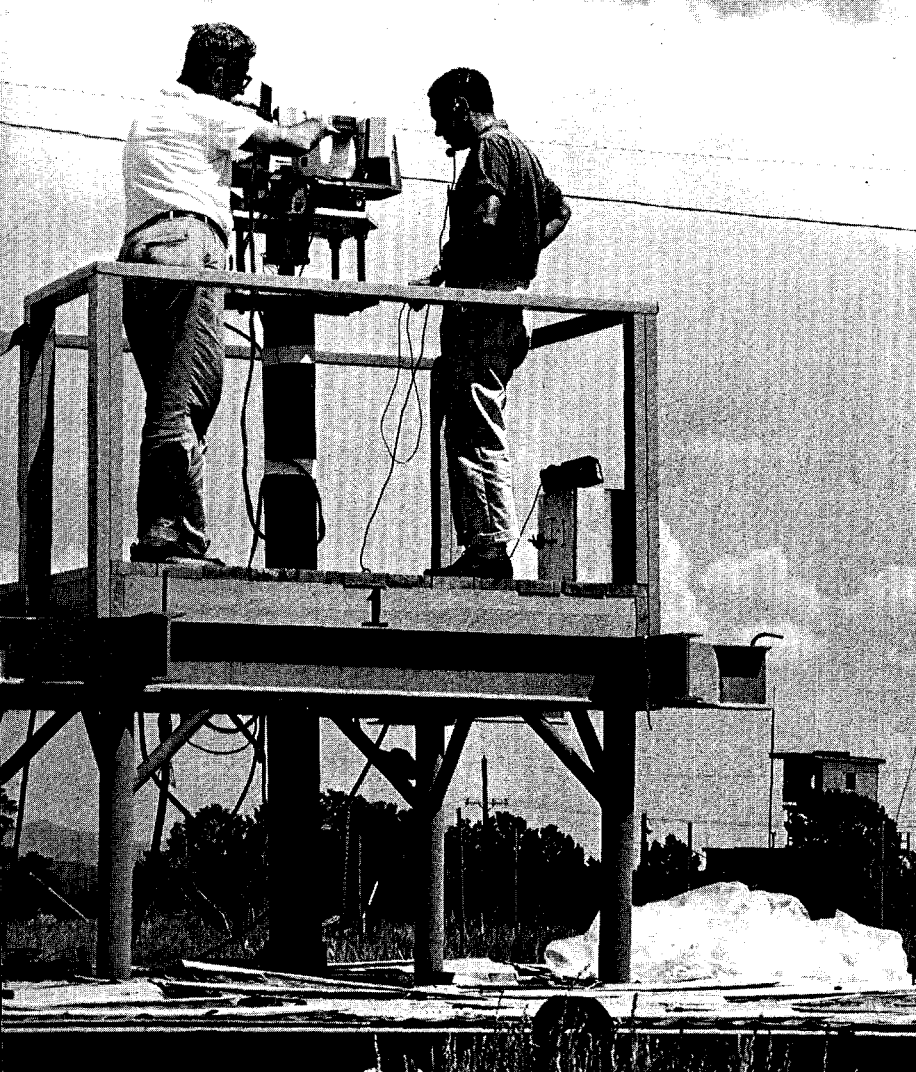


Leaving daily briefings in aging conference building at TA-49 are (from front to rear of column) Clifton Lillioff of EGG, Milton Peek of LASL, Henry Foster of AWRE, Richard Amato and Larry Teel of EGG, Whitney Patton of DRI and Herman Hoerlin of LASL.

isolation," but mostly because it provides an almost unlimited view of the surrounding mountains. Included in the far-reaching vista are the peaks of the Magdalena Mountains, some 150 miles south of Los Alamos, where at 10,640 feet is located the Irving Langmuir Laboratory for Atmospheric Physics, an extension of the New Mexico Institute of Mining and Technology at Socorro. This bit of geography makes it possible to have sighting coordination for lightning strikes that occur between the two points.

Dominant physical installation of the Los Alamos station is a 12-foot-square shed that has been erected atop a 30-foot-high steel tower. Spectographs inside look out through a big picture window in one wall. This unlikely-looking ob-

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Upper Left: John Coffidis (left) and Paul Louizos, both of Boston, Mass., make adjustments at one of the three EGG remote-control triangulation cameras.

Upper Right: LASL observatory can be rotated full-circle for spectrophotographic look at storm activity over much of north-central New Mexico's mountain ranges.

Left: D-8's Frank Berry opens gate for access to TA-49 on Frijoles Mesa. Project Vela is the program to develop means for detecting nuclear explosions.

Lightning . . .

continued from page 21

servatory can be rotated 360 degrees, making it possible to quickly zero-in wherever the action is.

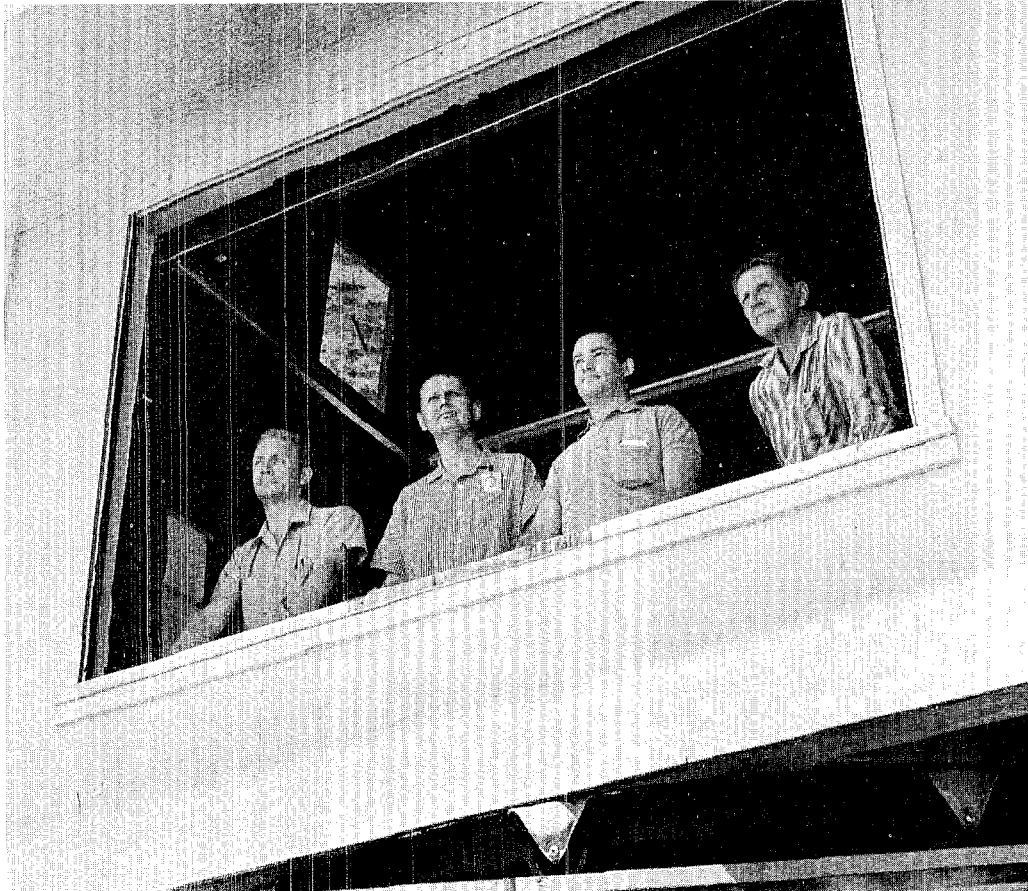
Other equipment at the main control point is in trailers and in some of the weathered gray plywood buildings that were used when TA-49 was fully operational. Elsewhere on the pine-covered mesa, among mounds marking ancient Indian dwellings, are remote stations and a trailer complex housing AWRE and DRI scientists. Unmanned camera equipment, operated remotely from the central control point, is mounted at three outlying locations for triangulation measurements to pinpoint the location of strikes.

J-10 Group Leader Herman Hoerlin said the LASL experimenters are looking with a narrow field of view at the optical aspects of lightning, making highly resolved measurements photographically, spectroscopically and photo-electrically. The EGG-Air Force team is operating an "all-sky system" which was developed by Don Westervelt, Hoerlin and others in J-10 nearly six years ago. The British and DRI teams are interested more in the electromagnetic effects of a lightning discharge.

In a nuclear burst much of the energy comes off first as x rays. These travel unimpeded through space until they encounter the atmosphere, an event that occurs at an altitude of about 60 miles. Air offers a barrier to the x radiation, resulting in conversion of the x-ray energy to visible light. This light is particularly evident in the 3914 Angstrom unit wavelength, a bluish glow that is characteristic of excited nitrogen. Lightning, crashing to earth from an overhead cloud, causes the same sort of excitation—3914 Å radiation. The same wavelength also can be seen in aurora.

So far, no good. A detector that "sees" 3914 Å radiation will sound

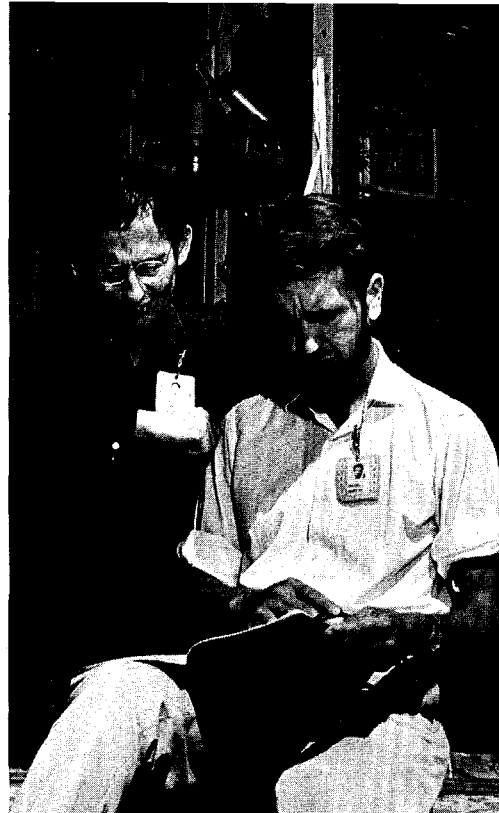
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Watching from observatory picture window are LASL J-10 staff members (from left) Bob Connor, Milton Peek, Guy Barasch and Herman Hoerlin.

"Trailer court" at TA-49 is main control point for lightning studies. Trailers hold shop tools and electronic gear.





Far Left: Antenna assembly for receiving lightning electromagnetic signals is checked by Kenneth Panck (left) and Whitney Patton of DRI.

Left: From England's AWRE are Lionel Lait (left) and Henry Foster.

Lightning . . .

Continued from preceding page

the alarm—perhaps truthfully, but perhaps in error.

Some extraneous nitrogen "signatures" are fairly easy to cope with: Set up the sensor so that only very brief pulses of radiation trigger the alarm. Signals from the aurora, for example, are of relatively long duration. Signals generated in the upper atmosphere by the output of a bomb have a time signature that is measured in units of millionths of seconds.

But so are those from a burst of lightning.

So, an additional identification is necessary. This can be achieved because lightning also emits rather prominent signals in other wavelengths, one of which is characteristic of hydrogen. It is lacking in the signals from a nuclear burst that occurs in space.

Thus if a detection system that is sensitive to both forms of radiation sees only a pulse of 3914 Å it will shout "Bomb!" But if it sees 3914 and the hydrogen wavelength, too, it can be pretty sure the signal came from lightning.

There are many other factors to consider in the discrimination and safeguard systems, Hoerlin stressed. For one thing, there are other radiations, common to bombs and lightning, that must be compared and evaluated. One is electromagnetic radiation; it can be detected as radio signals. Radio pulses from bombs and lightning are short-lived and cover a wide range of frequencies.

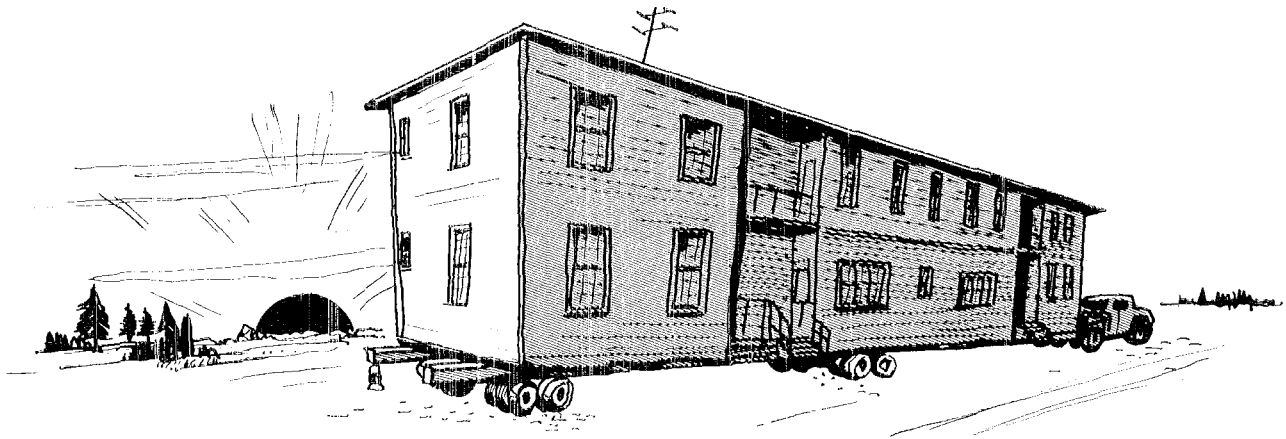
Successful scientific lightning-watching poses other problems. Making certain that all the experiments are looking at the same strike and that the information doesn't get mixed with previous or following observations is an example. To assure synchronization, EGG has supplied a master counter; every frame of film or other data record for a particular event is marked automatically with a time-coordinated reference. "Normal" photos of the sky are taken simultaneously with each scientific measurement to provide further correlation.

Since lightning isn't predictable by ordinary means, it is essential to know when to open camera shutters and set other equipment in operation. This isn't of great concern at

night; shutters can be left open for long periods. But during the daytime, when the expansive New Mexico sky may be bright with sunlight in one corner and dark with storm in another, one obviously can't use a time exposure while waiting for lightning to strike. New Mexico Tech loaned a device that quite effectively serves as a lightning predictor. Measuring the "potential gradient," the instrument indicates the electric charge buildup between ground and clouds. It can be set so that when the charge is just seconds shy of breakdown it will turn instrumentation on just in time to catch the lightning bolt.

At all times of the day and night, whenever particularly promising clouds scud across the mountaintops, researchers are liable to be summoned from slumber or meals. This can cause difficulty, too. What with the chronic Los Alamos housing and transportation shortage, some visitors are living in Government apartments, some are guests in private homes, and others commute from Santa Fe. Some have their own cars, others have Government vehicles and many are using rented transportation.

Hoerlin said the experiments will continue so long as summer storm activity warrants manning the stations, probably until after Labor Day.



Sketch by Hal Olson

Setting of the Sundts

By DUDLEY LYNCH

One by one, Los Alamos' senescent Sundt apartments are taking on that unattended look. Tenants are moving out. Demolition crews and the workaday noises of heavy machinery now share the scene with the remaining soon-to-be-evacuated families.

With each building's departure (they are being sold), a story spanning the laboratory's more than two decades of mercurial growth nears its final paragraph.

The demise of the Sundts has been long overdue. For this reason, virtually no one challenges the decision to remove the housing landmarks. Still, some veteran Hill residents may view the exodus with a tinge of nostalgia.

The Sundts, of which there were originally 332 units, have served well. Despite being models of external simplicity, the apartments were once considered *Belles* in a collection of nondescript housing. Quite obviously, they were never palaces. And unhappy wives, during the war years especially, soundly cussed and discussed flimsy partitions, pristine heating and pervasive "sameness."

But to a town that practically said grace when its water faucets flowed, the Sundts introduced a portent of permanency, a change of flavor for makeshift "P. O. Box 1663." The romance of the Sundts, however, has faded in the wear and tear of 20-plus years. Their record, though, stands: Since 1955, they have been the only large-scale, war-

time-built housing still in existence.

"They are old, period," agrees an anxious-to-move housewife. Her neighbors in the four-unit building have been relocated, leaving her and about five dozen other families still living in the sprawling Sundt area. She hopes to be out by autumn, and all Sundt-dwellers may have new house numbers by January.

The AEC predisposal program has the most immediate interest in the removal of the Sundts, particularly those south of Trinity Drive. Widening of the heavily-traveled arterial—expected now to be one of the last major predisposal projects—has been repeatedly postponed; several of the apartments stand in the needed 80-foot right-of-way.

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Half a Sundt moves across the Los Alamos Canyon Bridge on its way to the Valley, the place where much early Los Alamos housing goes when its Government service is over.

Transporting Sundts requires removal of overhanging wires and is permitted only during lulls in the daily traffic flow. Albuquerque firm will haul up to 200 miles.

Sundt Set . . .

continued from preceding page

However, all of these structures, save one, have been sold. They must be moved by early fall. The AEC hopes to have the Trinity job programmed within a year.

Another and more long-ranged reason for wanting the Sundts out lies in the potential use of the land. Planners project much of the strategic area, on the periphery of the Community Center and proposed local government complex, as ideal

for locating high-density, town house-type apartments.

MORE apartments?

Right . . . but something a little more sumptuous than the rigid, barracks-type Sundts, whose designers, probably of wartime necessity, made a religion out of right angles. Truly, there can be little justified criticism of the harried officials responsible for planning the Sundts, which were finished in November, 1943. "They didn't know the Sundts were going to be here this long," reminds Loring Cox, Jr. of the AEC real estate sec-

tion. "Their thinking was to get them up as quickly as possible." Life span of the Sundts then was estimated at five years.

Despite speedy erection (under two contracts, one to a builder named Sundt and the other to the well-known McKee company), the original construction provided a basic framework which, with improvements along the way, has withstood well the more than two decades of use.

Green plasterboard siding on some of the buildings was hidden in 1947 with more decorative as-

bestos material. Stepladder fire escapes joined the exterior trappings in 1948, and new fences and fresh paint followed a decade later.

If the Sundts are still structurally sound, why not leave them to be sold as low-rent housing in the AEC transfer of community ownership?

The AEC says the buildings are too expensive to maintain. It is doubtful that a private owner, forced to make maintenance outlays equal to those now required, could turn a profit. Possibly then, if left in place, the Sundts would emerge a first-class slum area under private ownership.

Some occupants insist they already live on the wrong side of the tracks. They express dissatisfaction over what they feel are inadequate yard areas, dowdy exteriors and weed-infested greenswards. "It's always been a slum area," grumbles the mother of a 2½-year-old youngster whose only playground is a carefully patrolled, second floor porch.

But the irritated wife admits the interiors are still livable.

Were the Sundts anywhere but at Los Alamos, they might bring a fair to middling price. But the costly downhill moving process has trimmed bids: Three of the first 31 buildings sold for \$1 apiece. The highest price paid so far is \$1,103.

Three firms from Los Alamos, Santa Fe and Albuquerque purchased the buildings, ranging from duplexes to eight-plexes. Some are being cut in half or quarters for transporting. Most of them apparently will become rental units in the Rio Grande Valley, from Espanola all the way down to Albuquerque.

For \$100 down and \$150 a month, the Albuquerque firm will move a Sundt anywhere within a 200-mile radius of Los Alamos, its owners said.

Removal of the Sundts has not been without its perils for the demolition crews.

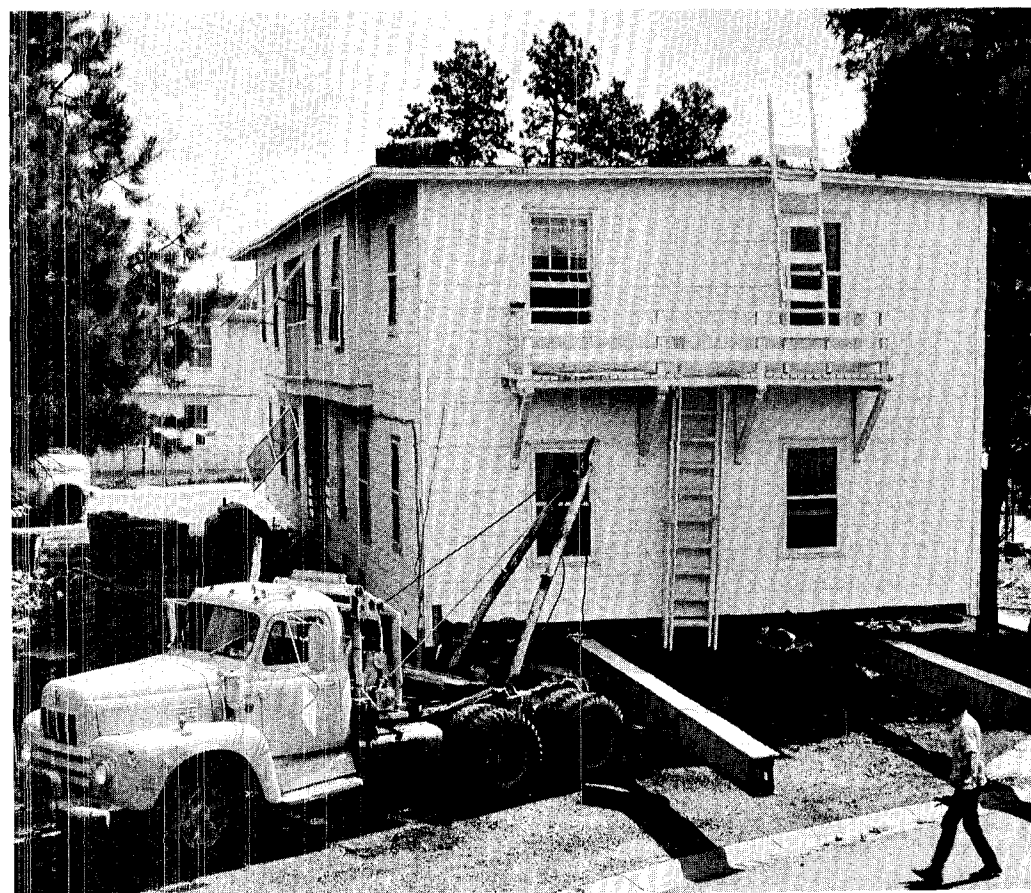
A winch line, being used to low-

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With furnace and boiler removed, crew saws Sundt building in half. In some cases lower walls were removed intact, upper apartments were lowered to truck for removal and downstairs was then reassembled and hauled away.

Attempt was made here to move entire four-unit building. Its weight was so great that big steel I-beams were snapped apart. Subsequent efforts were restricted to half-buildings. Heavy brick chimneys were removed, too.





It was a chance for speculation and they jumped at it. To their surprise, Bud Grady (left) and Bill Fisher, partners in an Albuquerque moving firm, were low bidders on 16 Sundts offered for sale in May. They have been keeping busy throughout the summer.

Sundt Set . . .

continued from preceding page

er a top floor, gave way, leaving part of one purchaser's profit in a battered heap. Another group loaded an eight-unit building—chimneys and all—aboard aircraft-tired dollies and watched the steel undercarriages snap like pretzels.

Bidders have been few, but included one fellow from Missouri who, sight unseen, submitted \$100 bids on two buildings. The first bids were opened on Sept. 17, 1964. Two more bid openings followed in April and May, and Zia disposal supervisor John J. Schofield expects another session possibly before summer's end.

In the last sixteen months, since Sundt assignments were discontinued (about 60 units were vacant then), the apartments have been emptied at the rate of a dozen families monthly. "We are two or three months ahead of schedule," says Cox of AEC real estate, "although no actual deadlines were set up."

One of the buildings to be abandoned on Trinity is the Girl Scout Little House. Scout leaders indicate they will decline the AEC's offer of the one-story building. They plan, instead, to move a log cabin "tinker toy" fashion from near Santa Fe to a 45-acre site west of Guaje Pines Cemetery and establish a permanent camping area.

The Sundts, which originally cost more than \$2 million totally, were erected in odd patterns over an area more than a mile in length. As ex-



Building razing and moving often is a "play by ear" proposition. Here a momentarily flummoxed workman crouches beneath a Sundt to ponder a temporary support. Walls and floors must be supported with precision to avoid cracking and even collapse.

planation for the seemingly whimsical placement, there are two theories: (1) thinking "temporarily," Army officials eschewed excavations to alter the demanding terrain and (2) the helter-skelter design was aimed at avoiding an "army camp" look.

There was logic, too, behind installing the apartments backwards. Back doors faced the streets so coal trucks—purveyors of fuel before the arrival of natural gas in 1947—could get close to furnace entrances. Janitors hand-stoked the hearths.

The Big Sound early on a cold winter day: Beltings of a go-lucky stoker, slamming of furnace doors, raucous scrappings of a shovel and an occasional yelp of satisfaction over a favorable turn of the dice.

Back in those nostalgic times, the big names of science today were likely to be "all in the same boat" neighbors along the greenhouse row.

Dr. Edward Teller, for example, lived downstairs in T-124, a four-family dwelling now listed as 1670 21st St. With his wife, Mici, and energetic young son, Paul, the Hungarian physicist followed an irregular routine and occasionally banged away at odd hours on a Steinway piano. Fortunately, the Tellers had understanding neighbors. (The apartment they then occupied is now vacant.)

Upstairs in Apartment D at 2854 Gold Street lived the Enrico Fermis. That unit, too, now sits empty and is awaiting demolition.

The Sundts, so primitive in various respects during the secretive wartime days, appear to have extracted a somewhat unsurpassed *camaraderie* from their subjects. Coal dust, the ritual of fall's sooty first stoking, the Black Beauty solid-fuel cooking stoves, the interiors' ubiquitous, non-washable cream paint—these were the ordeals that were the Sundts.

Whatever their deficiencies, the old days had an inimitable flavor. With the setting of the Sundts, Los Alamos will be losing a cenotaph to those historic hours.



Russell Archuleta watches from his yard at 3108 Trinity Drive as his neighborhood is moved away. Sundt and McKee apartments were built during war and were the "Ritz" for several years. Nearly all had large fireplaces, but none had bathtubs. Building exteriors were modernized after the war.

Stubby concrete piling which supported Sundts for 20 years looks insignificant and small in area after big frame buildings are gone. District will be cleared and offered for sale by AEC for commercial or apartment development.



AT BANDELIER . . .

MONUMENTAL MESS

Water—or a lack of it—sparked the whole intriguing chronicle of Bandelier National Monument a long time ago. And water, this time too much of it, added a weird, destructive chapter early this summer.

In late afternoon on June 18th, nearly four inches of rain cascaded into the heart of Bandelier (most of it in less than 30 minutes). Sluicing wildly off the steep canyon sides, the torrents created huge flows of sludge.

The headquarters area—including the Visitor Center and Frijoles Canyon Lodge—was hardest hit. Following the path of least resistance, tons of mire powered through patios and walkways. Fingers of ooze flowed in cabin windows. Mud piled 18 inches high in the Museum. When it was all over, sidewalks were buried beneath two feet of relocated Pajarito Plateau real estate.

The irreplaceable ruins? Virtually unscathed! “We were extremely fortunate,” said a relieved Tom B. Hyde, Parks Service Superintendent at Bandelier. “The Indians were a

lot smarter at locating their buildings than the white man.”

Other damage was widespread, however. Trails to Lummis, Capulin and Alamo Canyons were gutted. The road base of the main highway into Frijoles Canyon flirted with a washout. It will be autumn before corrective surgery repairs many of the scars in the administrative area.

Hyde—who experienced the Yellowstone National Park earthquake in 1959 and the Glacier Park flood last year—declined to put a price tag on the damages. Mrs. Evelyn Frey, Lodge manager, said she had not seen such a vicious storm in the 40 years she has lived in the canyon. (Average rainfall at Bandelier in June is less than an inch.)

But there is one propitious result: Aware of what can happen, Hyde plans to strengthen his defenses.

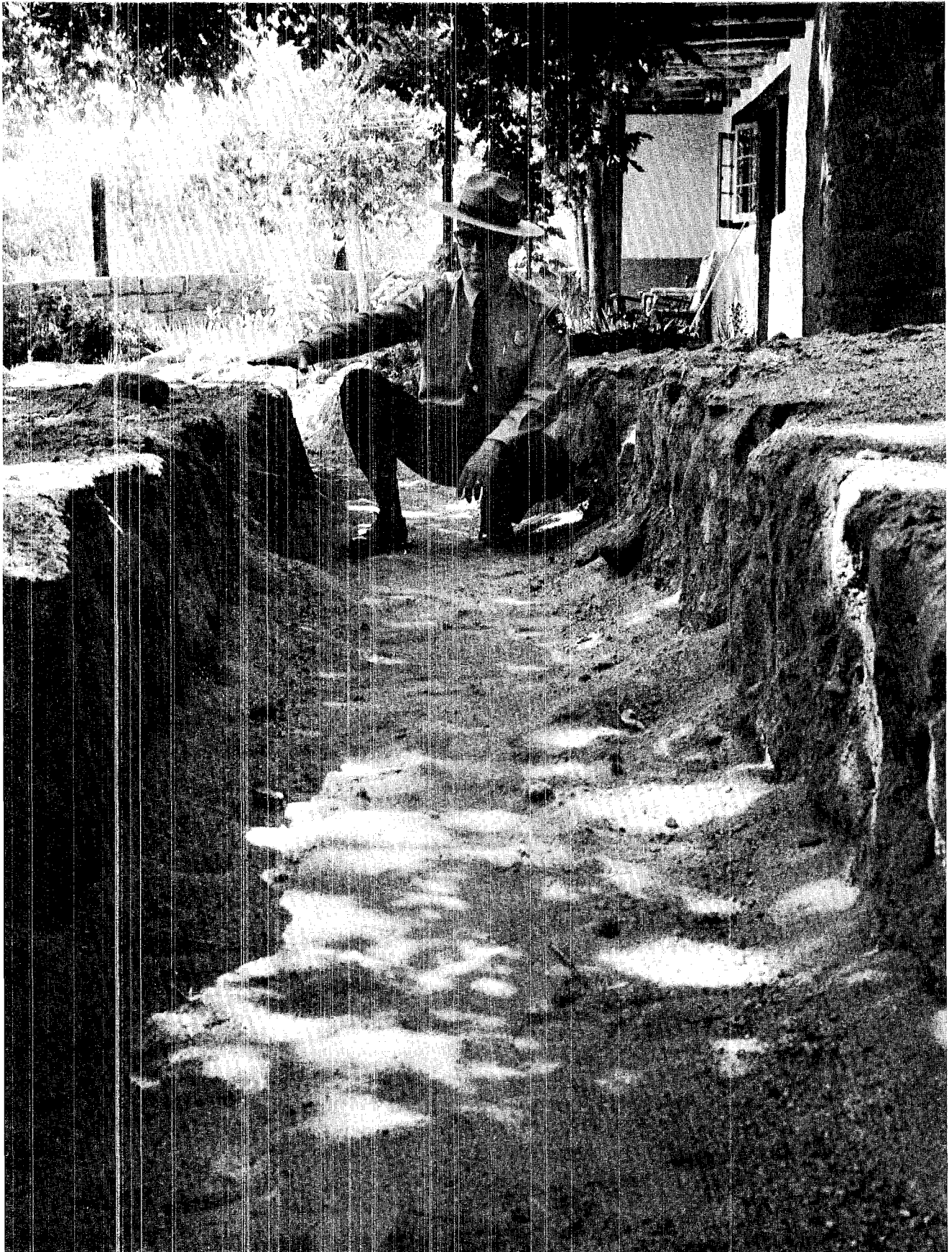
Water and soil diversion systems, already protecting the ruins, will be bolstered. A new system of protective terraces will be built for the administration area. Another

precaution, Hyde added drolly, is a plea to the Indians for no rain dances.

Seriously, Hyde said of the great June deluge, “It is going to take us a year to get back to where we were on the afternoon of the 18th.”

But the damage, he observed, could have been much worse, a loss of the irretrievable ruins put there 700 years ago by the Pueblos who, oddly enough, were seeking to escape a drought.

Superintendent Tom Hyde kneels in a two-foot furrow cut when sidewalks were cleared of silt that was deposited during flash flood caused by four-inch downpour in Frijoles Canyon.





Fiery exhaust is start of 60,000 mile rocket journey to space for LASL-built radiation detectors. Launch was early on July 20 from Cape Kennedy, Fla.

NOW THEY ARE SIX

Photos by RCA for the Air Force

LASL space physicists marked it three-in-a-row last month when the third set of tandem space sentries went into orbits some 60,000 miles from the earth.

The successful launch and orbit operation from Cape Kennedy, Fla. marked a new high

point in Vela Hotel progress and raised to six the number of satellites carrying LASL-designed instruments that are on guard for nuclear bursts in space.

As in 1963 and 1964 launches, an Atlas-Agena rocket team was the vehicle used to push the twin spacecraft to outer space. On-board rocket motors again injected the 500-pound 20-sided satellites into nearly circular orbits.

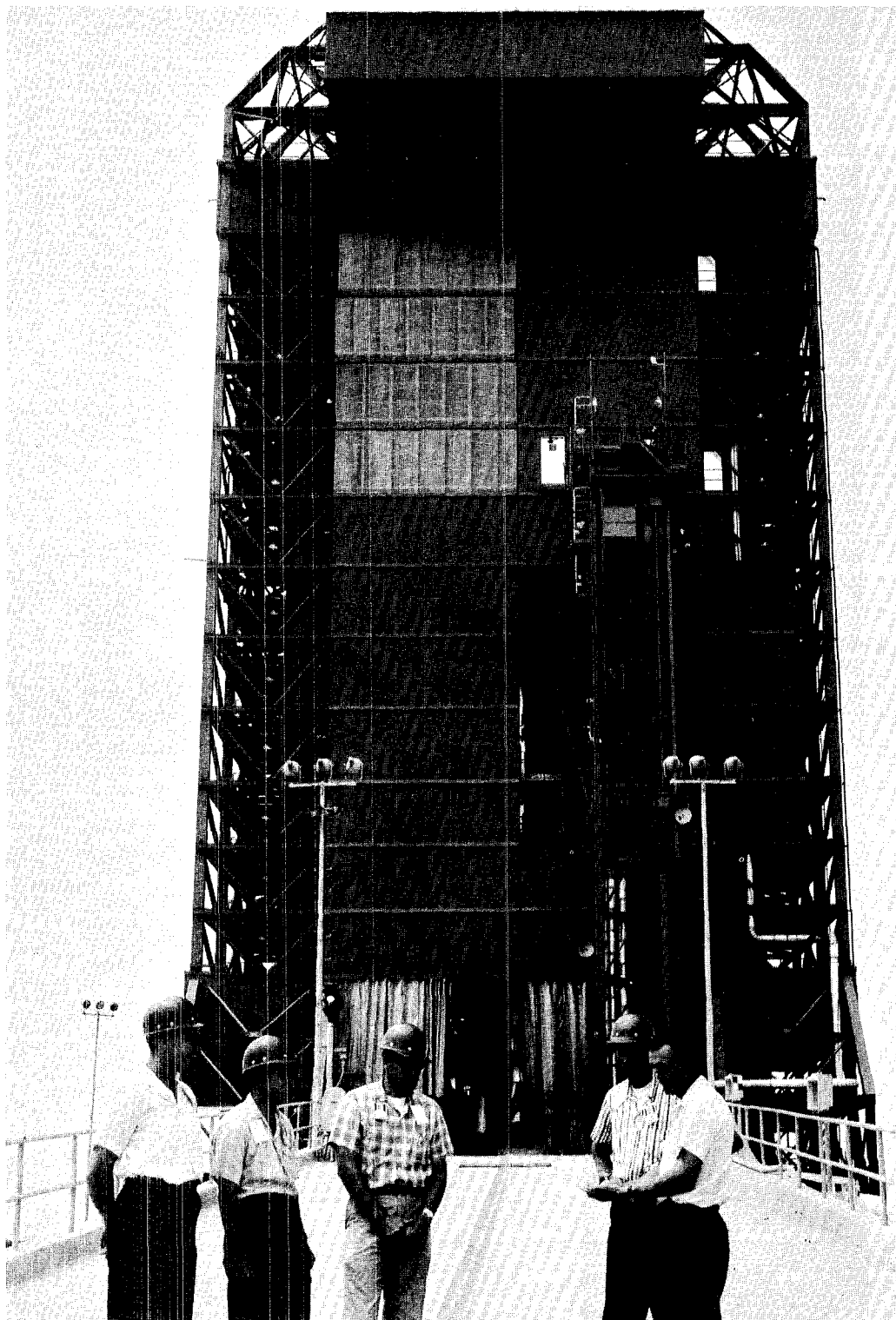
A team of LASL staff members and technicians from W-7, P-4 and P-1 were at the Cape for the launch July 20. Others, including W-7 Alternate Group Leader Bill Chambers, flew to the data reception center at Sunnyvale, Calif., once successful orbit and instrument operation was assured.

P-4 Group Leader James Coon said "everything went as planned." Only hitch was a brief launch delay ordered by the Air Force so that booster guidance systems could be doublechecked.

The 1965 edition of the Vela satellites represents considerable refinement in instrumentation design and construction. Reduced size of circuitry had made it possible to carry additional instruments. The unblinking electronic eyes on the spacecraft continue to look for neutrons, x rays and gamma rays that would indicate a nuclear burst and have added even more "pure science" detectors to make observations of natural background in space.

One of the benefits of the satellite program has been the wealth of information obtained on background radiation, especially activity originating with the sun.

Of increasing interest to scientists are the "belts" of charged particles that exist in vast zones near the earth. These include the Van Allen belts and other areas of radiation activity that may be of importance in planning future manned flight through space. The satellites are supplying information that is helpful for plotting the location of



Atlas-Agena gantry looms behind them as pre-launch preparations are reviewed by (from left) Walter Kunz of W-7, Sam Bame and Jack Asbridge of P-4, Louis Cutler of P-DO, and P-4 Group Leader James Coon.

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Satellites . . .

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the belts and determining the effect of the earth's magnetic field on them.

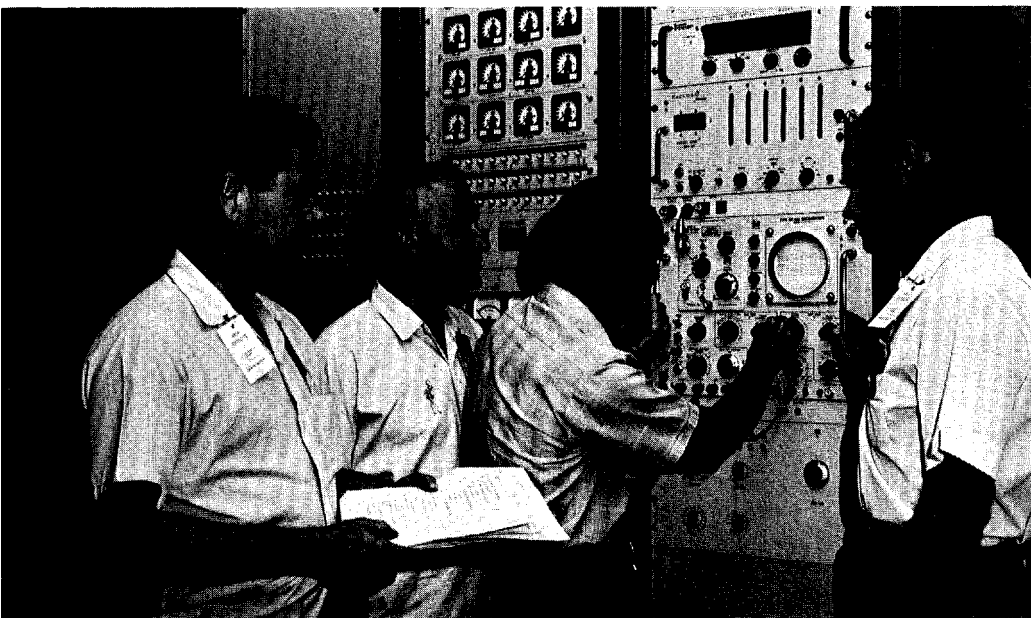
Of great scientific interest is information concerning the solar x rays. The first Vela satellites were launched during a period of minimum solar activity. Now the sun is entering a period of increasing activity, with maximum activity due by 1968. One of the major scientific goals of Vela has become the study of the character of these radiations as solar activity increases.

Instrumentation on the new satellites is capable of making quantitative measurements of x ray intensities 10 times greater than has been possible before. Information obtained by the new satellites and the earlier four is expected to be an unparalleled source of data for solar cycle research.

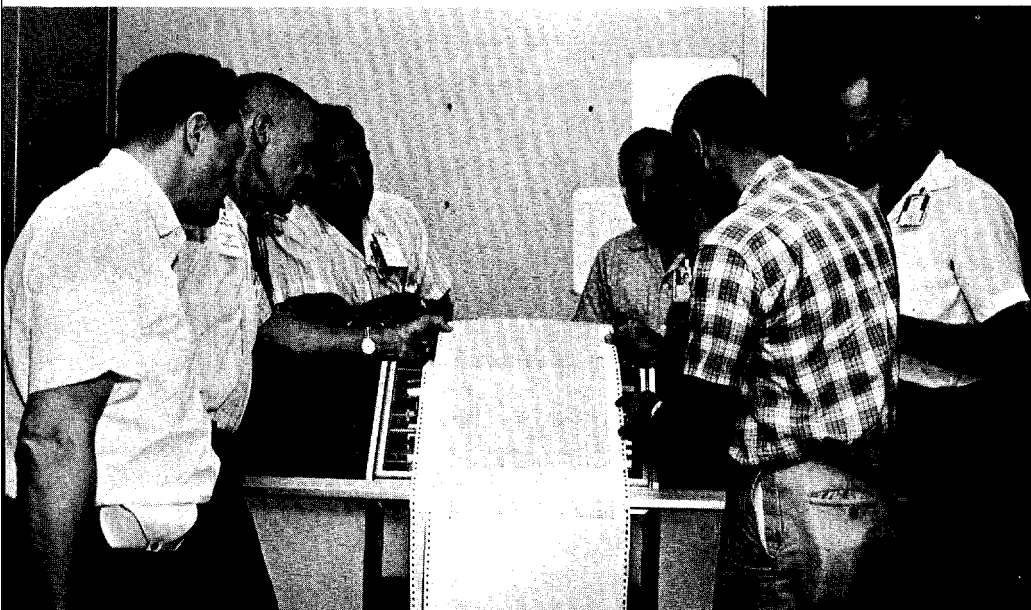
Also seen by the orbiting satellites is the so-called "transition area," where solar wind particles first come under the influence of the earth's magnetic field. This parabola-shaped zone is some 50,000 miles from the earth, pointing toward the sun. Fluctuations in this transition region have been found to correlate with magnetic disturbances occurring on earth.

The spacecraft measures 54 inches in diameter. Each of the 20 triangular side panels is covered with solar cells which draw energy from the sun for operation of all internal electronic equipment.

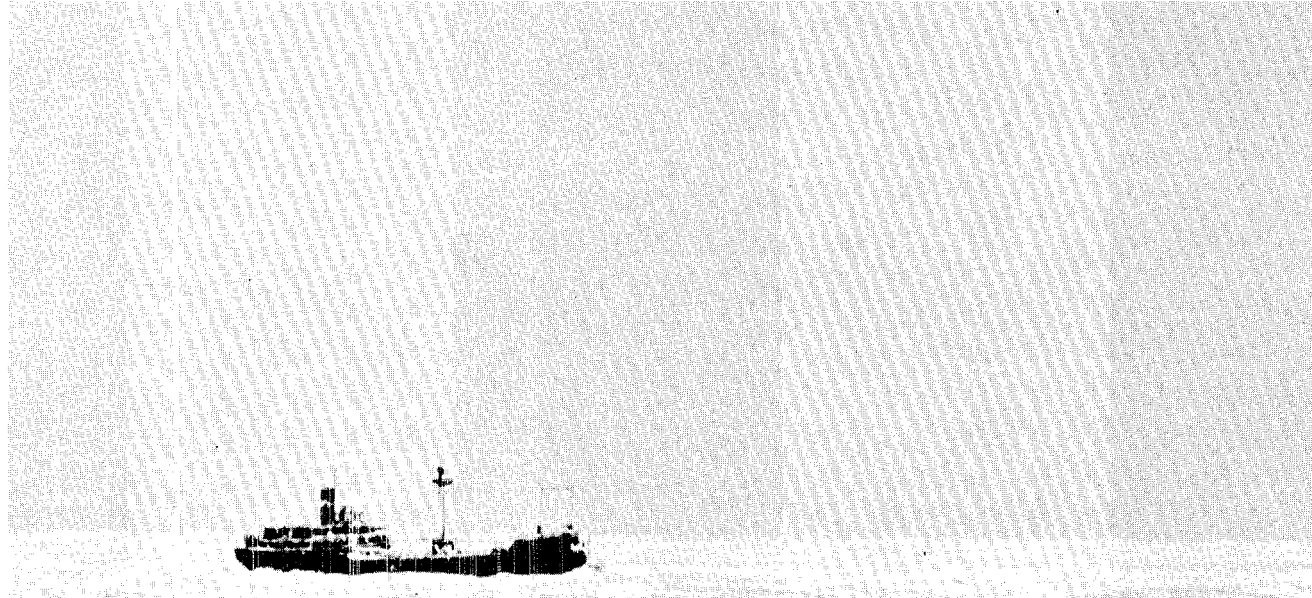
The new satellites also carry on-board nitrogen gas "nudging" rockets that will make it possible to change orbit speed somewhat. It is hoped to attain and maintain a constant separation. Earlier spacecraft have had unequal orbit periods resulting in a condition where one satellite overtakes and passes the other.



Instrumentation checkout at Cape Kennedy test center verifies satellites are "go." From left are Paul Glore and Walt Weber of P-1, Sam Bame and Jerry Conner of P-4. Sensors were built by LASL, logics equipment by Sandia.



Successful launch of third Vela satellite twins is confirmed by computer for (left to right) William Aiello of P-1, Ralph Greenwood of P-4, Russ Youngblood of P-1, Ray Klebesadel and Jack Asbridge of P-4 and Walt Kunz of W-7.



SCENIC CRUISE

ON TRAVEL

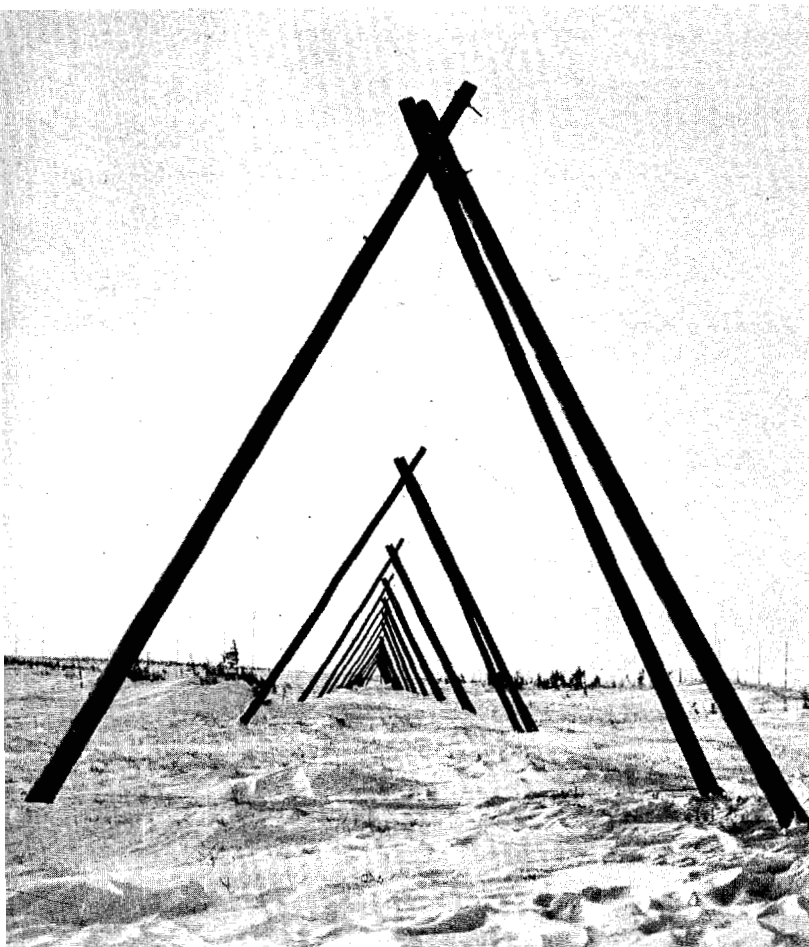
FAMILY REUNION



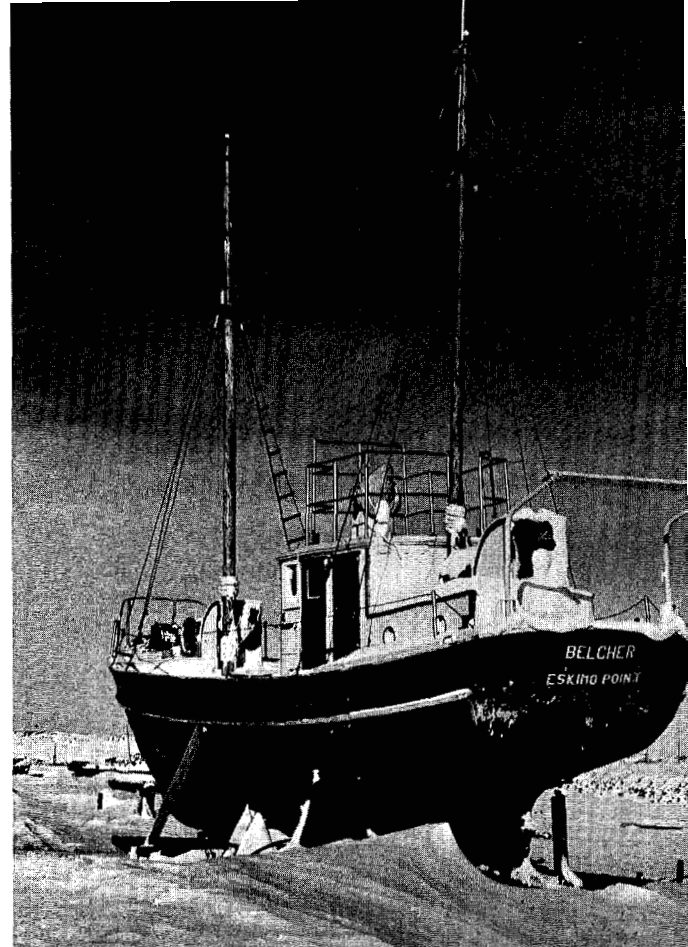
There is a tendency, particularly among those who don't travel much, to sometimes regard their colleagues' Laboratory trips with raised brows—"Another boondoggle, eh?" And while it is true that business frequently takes Los Alamos people to some far-flung places with exotic and exciting names, official travel usually involves far more routine than revelry. Like the expedition last winter to northern Canada's Fort Churchill, in which a group of LASL scientists endured more than a month of sub-zero temperatures and barracks living while making scientific observations of the aurora borealis. PUB's Bill Jack Rodgers was along on that "trip," doubling as technical photographer and expedition photo-historian. The customary remark greeted his return: "Well, how was the vacation?"

"That's like being hit with a chunk of blubber," the still-chilled photographer commented. To illustrate the pleasures of lollygagging on the picturesque shores of Hudson Bay, Rodgers prepared this captioned travelog for summer perusal.

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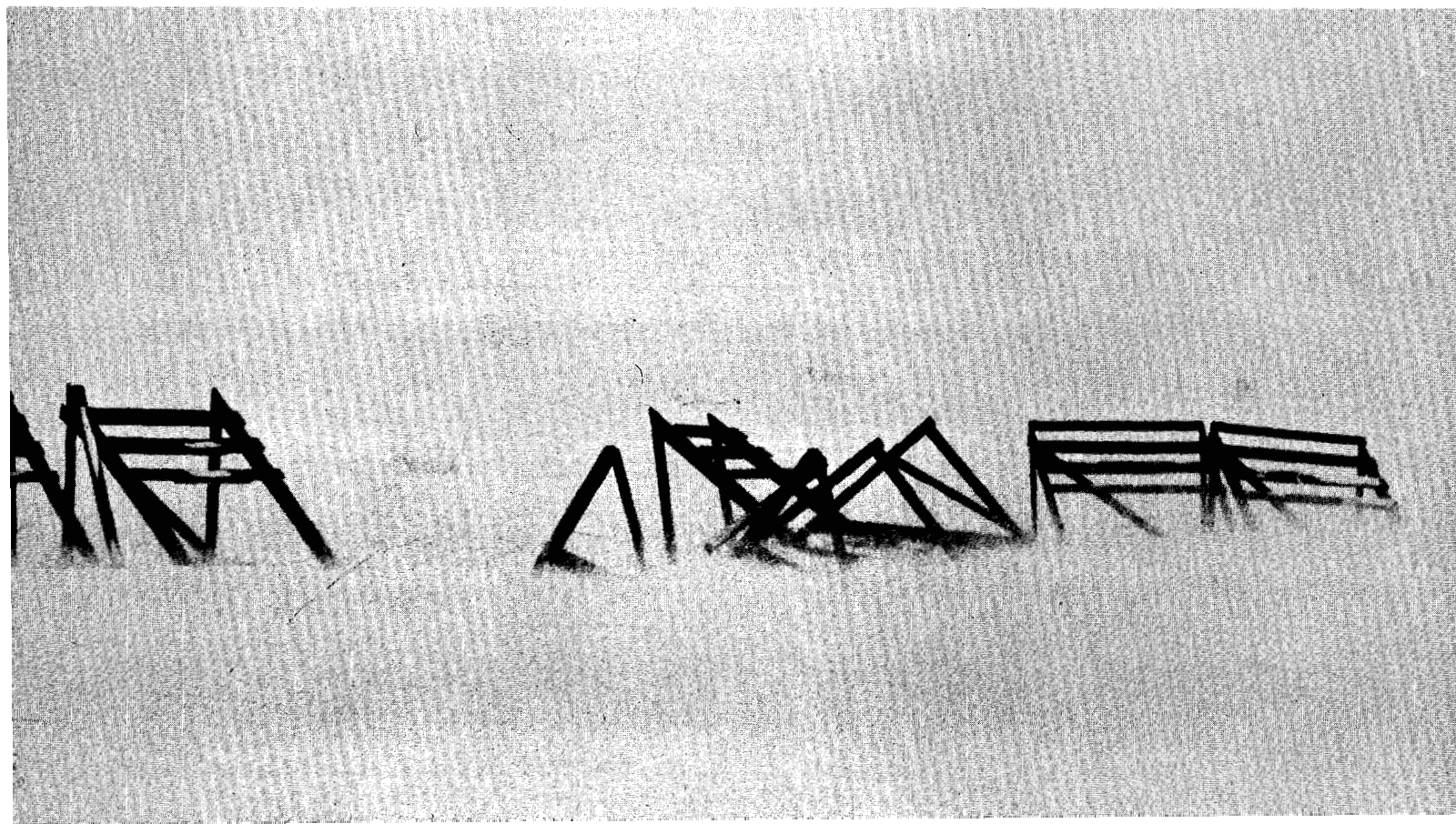


HISTORIC TOUR: INDIAN RUIN



A TOUCH OF VENICE

A DAY ON THE FARM

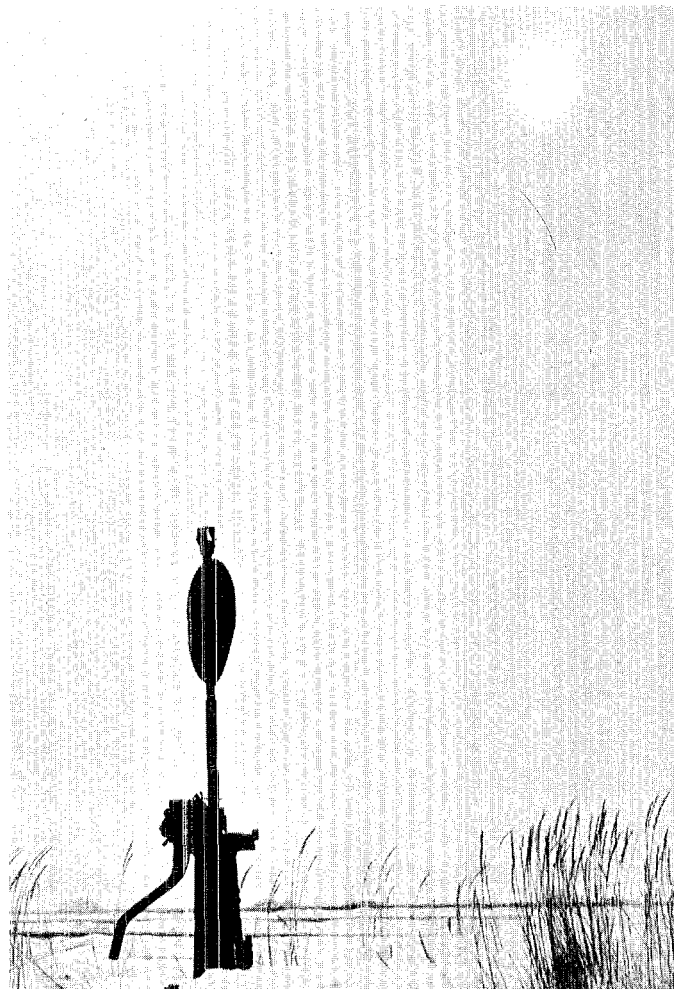




AN AFTERNOON IN THE PARK

BUSTLING RAIL TERMINAL

FUN IN THE SUN



The Technical Side

IAEA Meeting, Symposium on Thermodynamics with Emphasis on Nuclear Materials and Atomic Transport in Solids, Vienna, Austria, July 22-27:

"The Vapor Pressure of Plutonium" by Robert N. R. Mulford, CMF-5.

"Densities of Some Low Melting Plutonium Alloys" by Ralph H. Perkins, Louis A. Geoffrion, and John C. Biery, all K-2.

"Self-Diffusion Studies on Gamma Plutonium" by Raymond E. Tate and Glen R. Edwards, both CMF-5.

"Practical Application of Thermodynamics to Plutonium Process Reactions at High Temperature" by J. A. Leary and L. J. Mullins, both CMB-11.

"A Mass Spectrometric Study of the Vapor Pressure of U^8 and UC_2^8 Over Various Compositions in the Uranium-Carbon System" by Edmund K. Storms, CMB-3.

Second Annual Meeting of the AIAA, San Francisco, Calif., July 26-29:

"Kiwi-Phoenix Progress Report" by R. W. Spence, N-DO. (INVITED PAPER)

"Advanced Nuclear Propulsion Concepts" by Ralph S. Cooper, T-DO.

"Developmental Testing of Nuclear Systems for Space" by Keith Boyer, J-DO and C. C. Miesse (GE Co., Philadelphia, Pa).

IEEE Annual Conference on Nuclear and Space Radiation Effects, Ann Arbor, Mich., July 12-15:

"Dosimeter for High Intensity Pulses" by William L. Briscoe, P-1.

International Conference on the Study of Nuclear Structure with Neutrons, sponsored by International Union of Pure and Applied Physics, Antwerp, Belgium, July 19-23:

"High-Resolution Measurements of Gamma Rays from Neutron Inelastic Scattering" by Robert B. Day and John M. Palms, both P-DOR.

"High Energy Gamma Ray Spectrum from Thermal Neutron Capture in Holmium" by H. T. Motz and E. T. Jurney, both P-2.

"Production of Heavy Nuclei by Multiple Neutron Capture in Nuclear Explosions" by George I. Bell, T-DOT.

Presentation at the Gordon Conference on Nuclear Chemistry, New London, N.H., June 21-25:

"Neutron Capture Gamma-Ray Spectroscopy" by Henry T. Motz, P-2.

Presentation at Seminars: University of Illinois, June 29, and Purdue University, July 30:

"Thermal Neutron Spectra From an Underground Nuclear Explosion" by Henry A. Sandmeier, T-DOT.

International Conference on Protactinium Chemistry, Orsay, France, July 2-8:

"Preparation and Properties of Some Alkali Fluoride Complexes of Pentavalent Protactinium" by L. B. Asprey, R. A. Penneman, and F. H. Kruse, all CMF-4. (INVITED PAPER)

"Fluoride Complexes of Tetravalent Protactinium" by L. B. Asprey and R. A. Penneman, both CMF-4. (INVITED PAPER)

Meeting of Special Libraries Division, Arizona State Library Association, Flagstaff, July 3:

"Problems of the Report Literature" by Helen F. Redman, D-2.

After 20 Years: A Patent for Pu

Two former LASL staff members, one of them now dead, are among three scientists who have been awarded a patent for the process that yields the man-made element plutonium.

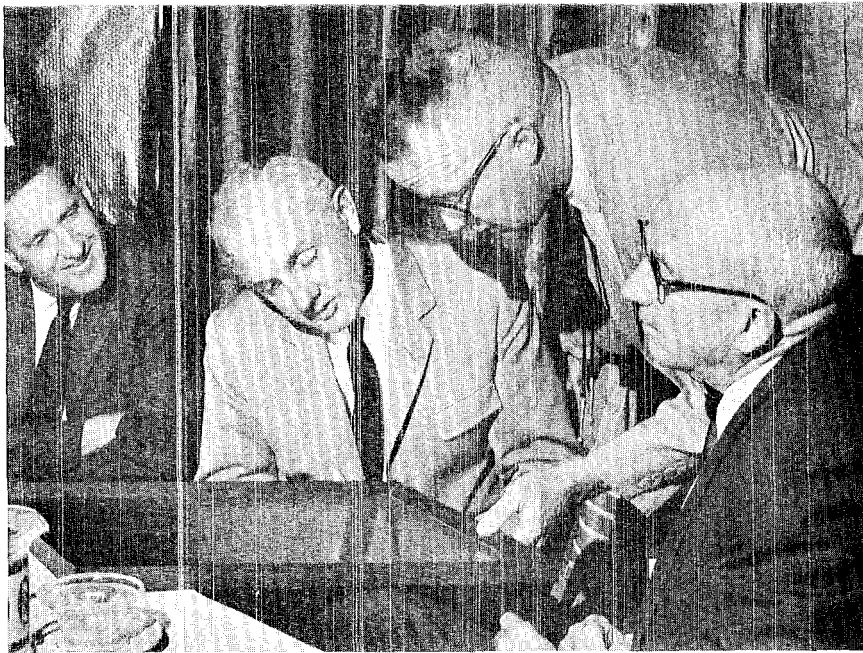
The patent, which has been assigned to the Atomic Energy Commission, was granted Dr. Glenn Seaborg, chairman of the AEC, and to Drs. Arthur C. Wahl of Washington University, St. Louis, Mo., and the late Joseph W. Kennedy. The three were research colleagues at the University of California in the early 1940's when Seaborg discovered element 94 by bombarding uranium with neutrons.

Application for the patent was filed in 1945. It includes treatment of uranium in a reactor to produce plutonium and a process called oxidation reduction that is used to separate the new element from its parent.

Kennedy was head of the old CM Division (predecessor to CMR) from 1943 to 1945. He later joined the Washington University staff but remained a consultant to LASL. He died in 1957.

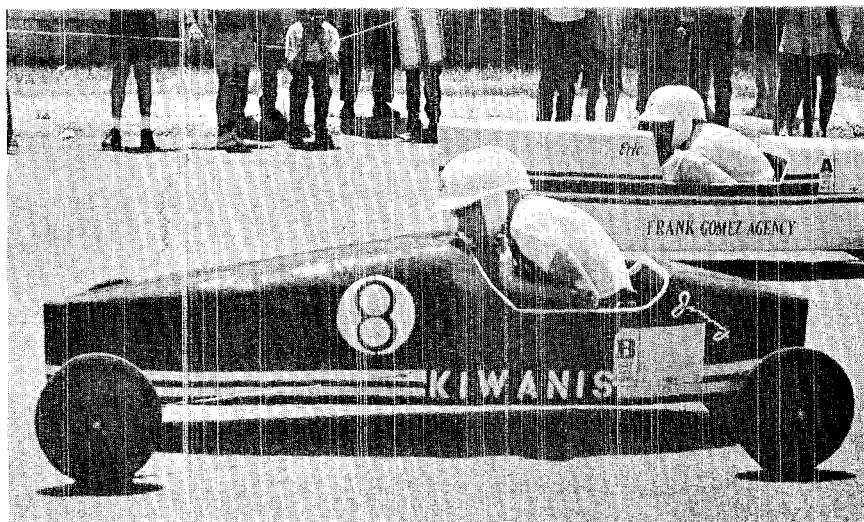
Wahl was at Los Alamos from 1943 to 1946 and was a group leader in CM Division. He left Los Alamos to go to St. Louis and has been a LASL consultant since 1950.

Seaborg's discovery that an isotope of plutonium, 239, was fissionable was a closely-kept secret throughout the war and became known only when it was announced that the nuclear weapon used over Nagasaki was a plutonium device, and similar to the one tested at Trinity Site.



A copper engraving of the front page of the August 6, 1945, New Mexican—the issue that revealed to the world just what had been going on up in the Jemez Mountains for the past few years—has been presented to LASL Director Norris Bradbury by Robert McKinney, publisher of the New Mexican. Present for the presentation were (from left) Harold Agnew, now W Division Leader who was a member of the Hiroshima mission scientific team, McKinney, PUB Boss John Young and Dr. Bradbury. The framed reproduction of the historic front page will be exhibited in the LASL Museum, Dr. Bradbury said.

Eleven-year-old Jimmy McMillan speeds to the finish line and victory in the second annual Los Alamos Soap Box Derby last month. Jimmy's father is Dean McMillan, a physicist in K-3. The victory brings Jimmy a \$500 bond and trip to Akron, Ohio, for participation in the national Derby August 7. Second place was taken by Eric Urban of Santa Fe, whose father won the race in that city 25 years ago. Hans Scheuter, 1965 Derby Director for the sponsoring Los Alamos Junior Chamber of Commerce, said 1966 race applications are being taken.



WHAT'S DOING

YOUTH OPERA LECTURES: Open to the public, no charge, sponsored by Los Alamos Opera Guild and Los Alamos Schools Music Department. Pajarito School Auditorium.

Sunday, August 8, "The Nose," lecture by Mrs. Leon Heller, 7:30 p.m.

Sunday, August 15, "Marriage of Figaro," lecture by Mrs. Donald Hagerman, 7 p.m.

EXHIBITIONS: Museum of New Mexico, Santa Fe, buildings open 9 a.m. to 5 p.m.

Monday through Saturday; 2 p.m. to 5 p.m. Sundays and holidays.

Fine Arts Building—American Primitive Watercolors; 1965 Fiesta-Biennial Exhibition.

Museum of International Folk Art—Five Continents, Gifts and Purchases; Textiles from Java, Bali, Sumatra; Shadow Figures From Siam; 1965 Southwestern Craftsmen's Exhibition.

OUTDOOR ASSOCIATION: No charge; open to the public. Contact leader for information regarding specific hikes.

Thursday, August 5, evening hike, Val Mosier, leader.

*Saturday and Sunday, August 7 and 8, Cabresto Lake to Latir Lakes and return. An overnight trip through interesting high lake country. Bob Skaggs, leader.

Thursday, August 12, evening hike. Ken Ewing, leader.

Thursday, August 19, evening hike. Dibbon Hagar, leader.

Saturday, August 21, Redondo Peak (subject to confirmation). Bob Day, leader.

*Saturday and Sunday, August 28 and 29, San Pedro Peaks Wild Area. An overnight trip through a seldom-visited area that should be seen more often. Terry Gibbs, leader.

*For overnight trips, call the leader well in advance so that appropriate arrangements can be made for food and transportation.

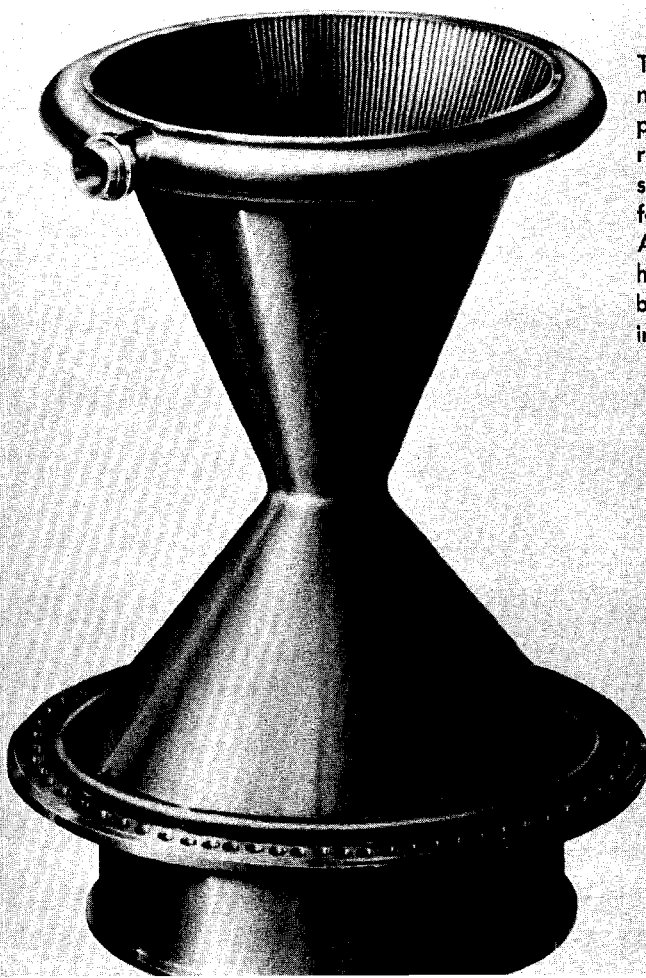


Members of the Sherwood Evaluation Committee were in Los Alamos last month on a nationwide look at controlled thermonuclear fusion research centers. At Los Alamos the group was briefed by scientists and visited various experimental assemblies. In the photo the group hears about the Scylla IV machine from Warren Quinn (left) of P-15. Others (from left) are Drs. S. J. Buchsbaum of Bell Telephone Labs, Raymond G. Herb of the University of Wisconsin, Thomas H. Johnson of Raytheon Corp., Gordon S. Brown of MIT, Samuel K. Allison of the University of Chicago and James Tuck, LASL Sherwood boss.

Newsman, Tech Writer Pub Staff Additions

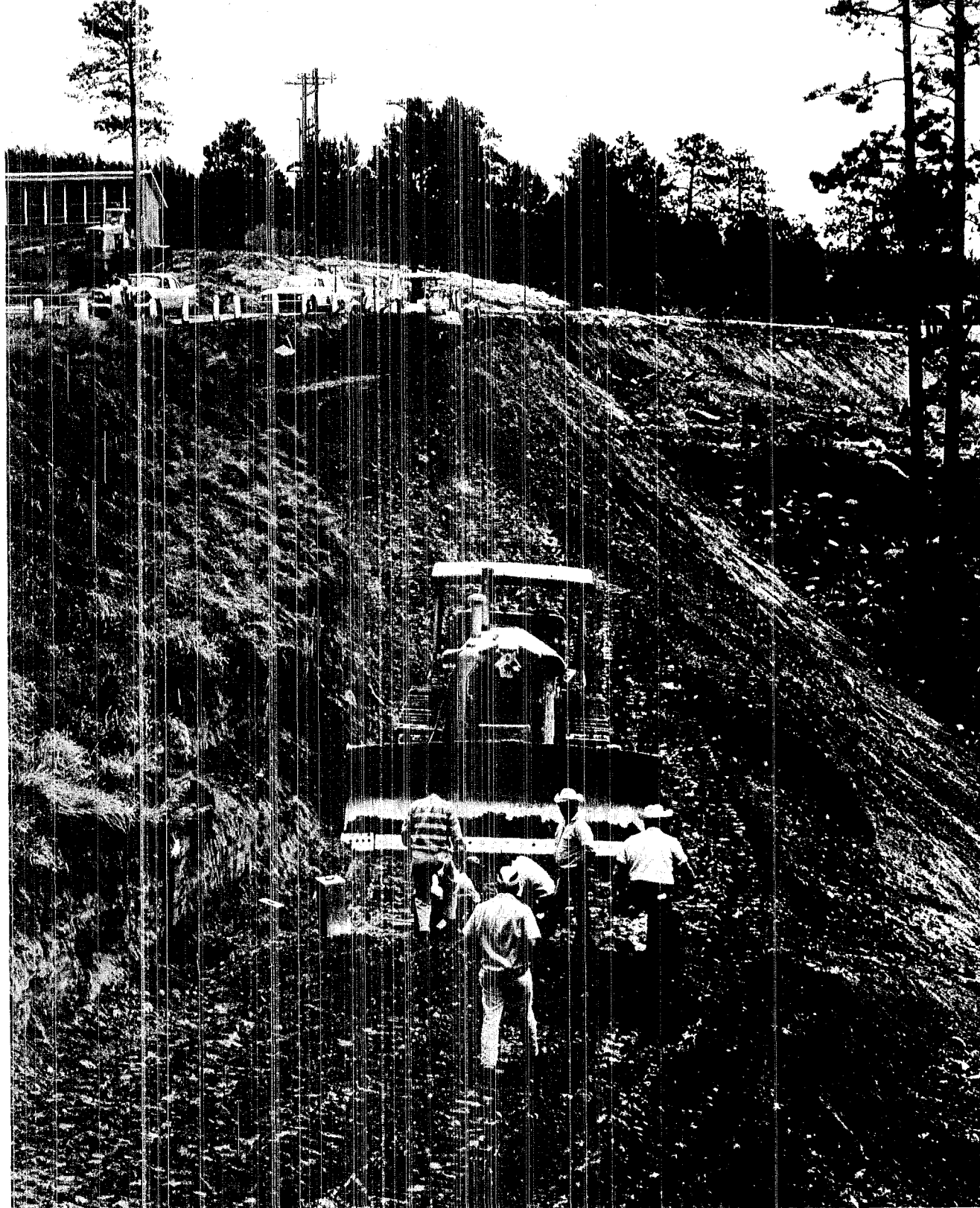
Dudley Lynch, former Hereford, Tex., newsman, and Edward Walterscheid, a technical writer at Lawrence Radiation Laboratory in Livermore, Calif., have joined the PUB staff to fill vacancies.

Lynch, a native of Memphis, Tennessee, was news editor of the Hereford Brand and earlier worked on papers in New Mexico and Texas. Walterscheid, a native of Carlsbad, N.M., worked for General Dynamics Corporation in San Diego before going to LRL in 1962.



The difference between Kiwi and a full-grown Phoebus nuclear rocket reactor is apparent in this sketch of comparative nozzle sizes. At right is a nozzle from the NERVA reactor, based on the final model Kiwis designed by LASL scientists. The man is six feet tall. Giant nozzle at left, is for the five billion-watt Phoebus now under design at Los Alamos. Aerojet-General Corporation of Sacramento, Calif., has an \$11 million contract for three Phoebus nozzles to be delivered to the Nuclear Rocket Development Station in Nevada in 1967. Sketch by Aerojet-General.





After failing to get outside bidders for the work, AEC last month contracted with Zia's LACI to do major street construction work on Diamond Drive. One of the biggest phases of the job is reduction of the steep grade on Diamond Drive by the Baptist Church. Photo was taken as bulldozers started paring away dirt and tuff. New four-lane roadbed grade will be cut down from 11 per cent to 2 per cent.

Back Cover: The man in the bosun's chair is Zia Ironworker Manuel Quintana. He is making final assembly of the new 60-foot aluminum flagpole in the front court of the LASL Administration Building. Photo by Bill Jack Rodgers.

